Warfare in Bronze Age Society

Edited by Christian Horn
and Kristian Kristiansen

WARFARE IN BRONZE AGE SOCIETY

Warfare in Bronze Age Society takes a fresh look at warfare and its role in reshaping Bronze Age society. The Bronze Age represents the global emergence of a militarized society with a martial culture, materialized in a package of new, efficient weapons that remained in use for millennia to come. Warfare became institutionalized and professionalized during the Bronze Age, and a new class of warriors made their appearance. Evidence for this development is reflected in the ostentatious display of weapons in burials and hoards and in iconography from rock art to palace frescoes. These new manifestations of martial culture constructed the warrior as a 'Hero' and warfare as 'Heroic'. The case studies, written by an international team of scholars, discuss these and other new aspects of Bronze Age warfare. Moreover, the essays show that warriors also facilitated mobility and innovation as new weapons quickly spread from the Mediterranean to northern Europe.

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PREFACE

This volume is the result of a conference on Bronze Age warfare held in December 2012 at the University of Gothenburg. The aim was to situate warfare in its social, demographic, technological and ideological contexts. We wish to express our gratitude to all speakers and participants for their active engagement and for contributing to lively discussions during the conference. Since then, the editors and authors have worked together to transform the original contributions and debates into a coherent publication. We are grateful to the two anonymous reviewers for providing constructive comments, which benefitted the book, and we are also grateful to Helle Vandkilde for her willingness to provide a concluding chapter.

INTRODUCING BRONZE AGE WARFARE

Christian Horn and Kristian Kristiansen

CONTEXTUALIZING BRONZE AGE WARFARE: THE EMERGENCE OF MARTIAL ARTS

In this book, it is argued that the Bronze Age represents the global emergence of a militarized society with a martial culture materialized in a package of new, efficient weapons that remained in use for millennia to come. It is evidenced in the ostentatious display of weapons in burials and hoards, as well as in iconography from rock art to palace frescoes (Osgood, Monks and Toms 2000). This development has been described in a variety of ways: as the emergence of warrior aristocracies (Kristiansen 1999; Treherne 1995, Chapter 15) linked to the emergence of the 'Hero' and his retinue (Hansen 2014; Vandkilde, Chapter 15), or simply through a study of weapons and their indications of use (Harding 2007; Horn 2013a; Kristiansen 1984, 2002; Molloy 2007; Quillec 2007; Randsborg 1995). It all comes down to the historical fact that warfare became institutionalized and professionalized during the Bronze Age, and a new class of warriors made its appearance, one displaying differences among Eurasian, Mediterranean, and European warrior classes that were rooted in their different social and political complexities. However, the differences were not as large between these different groups of warriors because they employed similar types of swords and warrior gear. The causes behind this development can be traced back to a combination of factors.

Demographic factors are crucial if we wish to understand the rapid development of a warrior-based society. The Bronze Age saw a remarkable rise in

population throughout Europe. According to calculations carried out by Johannes Müller, Europe's population doubled between 2000 and 1500 BC. In absolute figures, we are talking about 13–14 million people by around 1500 BC: Europe would now hold nearly as great a population as the Near East, despite lacking towns (Müller 2013: figures 8 and 10). This population increase went hand in hand with an increase in settled land. Most arable soils and grasslands, including heathlands, became permanently settled during the Bronze Age, and settlements were in many regions continuous: one could travel through 'civilized' and settled landscapes from Denmark to Italy, even if there were still some large tracts of forest that the prudent traveller would rather circumnavigate. Such large populations led to the gradual formation of more complex, ranked societies, and warriors were an essential ingredient in sustaining them, just as they were a potential destabilizing factor as well.

Economic factors played a key role in this demographic explosion (Bartelheim and Stäuble 2009). European communities adopted new, robust grains, such as millet, and vegetables, such as beans and peas, which helped to improve diets and feed more people (Stika and Heiss 2013). Farmhouses became larger and more diversified than during the preceding millennia, and, in northern Europe, some cattle were stalled, providing heating, manure, and milk. Single farmsteads with economy buildings crowded the landscape in temperate northern Europe, while well-organized village communities were dominant to the south. This more diversified economy, which also utilized mountainous areas for transhumance, expanded food output.

More importantly, perhaps, were improvements in dress and food preservation. The early to mid-second millennium saw the universal adaptation of woollen dress and a wool economy with extensive trade in both raw wool and large pieces of cloth (Frei et al. in press). This healthier and warmer dress was undoubtedly important for improved health conditions. In terms of food preservation, smoked and salted meat was adopted, as evidenced from the Hallstatt mines (Kern et al. 2009), and trade in salt, along with wool and metal, created a new commercial economy that connected all regions (Earle et al. 2015; Harding 2013). These improvements in costume and food preservation made long-distance travel less hazardous because more varied food supplies could be carried along in case of unforeseen events or the need to travel through unsettled landscapes. For warriors and traders alike, these were a basic foundation for surviving under difficult conditions. DNA from the hair of the Egtved woman confirms that travels could occur over long distances (Frei et al. 2015).

Political factors were important in the development of this new social order. The new commodity trade demanded stable political alliances between distant regions above the community level (Kristiansen and Suchowska-Ducke 2015; Vandkilde et al. 2015). The gradual introduction of bronze and bronze-working

technologies into all spheres of life, from weapons and ornaments to working tools, such as axes, and agrarian tools, such as sickles, had social and political implications. As all communities became dependent on regular supplies of bronze, new social institutions were established that secured such regular supplies on a year-to-year or perhaps even on a month-to-month basis. New forms of organized transport had to be developed, both at sea and on land, as well as political alliances and confederations that guaranteed the safety of traders and their companies. This could also have led to tension and conflict between competing regions (see Chapter 4). A stop in supplies would mean severe long-term economic and political consequences, and these had to be avoided. Consequently, we see the emergence of new forms of stable, long-distance alliances and confederacies, such as those documented in the marriages of foreign women into neighbouring kingdoms/chiefdoms or even distant ones, such as those between south Germany and Jutland – two highly organized and rich regions (Müller 2015; Kristiansen and Larsson 2005: figure 107). The rather direct connections between these two regions is documented not only in the distribution of shared sword types, such as octagonal hilted swords, but also in recent evidence from the Egtved burial, an eighteen-year-old woman buried in an oak coffin in Jutland who originated in south Germany and had travelled between the two regions twice during the last two years of her life (Frei et al. 2015). It presupposes the operation of regular routes with known destinations, where rules of guest friendship guaranteed food and safety along the way. Social mechanisms, such as marriage – the Egtved example – and the returning of foster sons to the mother's brother in south Germany would have forged these links into strong familial ties. It would also have had the power to potentially recast identities, as happened, for example, in the Mediterranean (see Chapter 6). These are traditional ways of securing alliances, well-known from Indo-European literature (Miller 2000: figure 4A).

The volume of weapons and number of warriors played a role. Recent calculations of the number of weapons deposited in warrior burials in Denmark during the period 1500–1100 BC reached a volume around 20,000 swords (see Chapter 3; Bunnefeldt 2013; Chapter 13 in this book). From Thy in Jutland, we have the densest distribution of swords, which suggests that nearly every major farm had a warrior. There existed around 20,000 farms in Denmark during this period (Holst et al. 2013), and, even if we assume that only one in ten (the largest farms) provided a sword-carrying warrior, it means that 2,000 sword-carrying warriors were available at any time. These were the war leaders. We must therefore assume that they were able to muster a retinue of lance-bearing warriors from all other farms of free men and women, thus making 20,000 lances in daily use during the Middle Bronze Age in Denmark. If we assume that an infantry warrior normally carried two lances, as demonstrated in both burials and on Mycenaean pictorial pottery, the figure becomes 40,000 lances.

Even if we assume that some farms only provided archers, the figures are massive. If we transfer these figures to the rest of Europe, we can multiply them correspondingly with the settled areas of that region, which were at least ten to twenty times larger than those in Denmark, a small but rich country, providing a minimum figure of 200,000 lance-carrying warriors (of the proposed 13–14 million Europeans living around 1500 BC, Denmark contributed about 300,000, which means that the calculation from the Danish case is conservative). Even if we assume that many regions were less well organized and less densely populated than Denmark (Müller 2013: figures 3–4), and even if we assume that not all farms provided warriors with lances, the numbers are telling: Bronze Age warfare had the capacity to scale up real armies when needed, as demonstrated in the Tollense valley (see Chapter 10). Moreover, it makes the claim stated at the beginning of this chapter less provocative, that the Bronze Age saw the emergence of a militarized society with a culture of martial arts. It immediately raises some new questions: what were warriors used for? Furthermore, what were the attractions of becoming a warrior?

The ideas of 'Hero' versus warrior and parading versus combat were additional factors in the rise of a warrior society. The Bronze Age sees the formation of two institutions that complemented each other: the ideological construction of the heroic warrior (the Hero, as known from sagas and ancient texts; e.g., Miller 2000) and the social construction of semi-professional warriors organized in military retinues when needed. Burial rituals as well as hoard depositions formalized the high, ideological standing of the warrior throughout Europe, especially after 1600 BC (Hansen 2014). Together with heroic literature, an oral tradition that came down to us only in later written form, it provided a blueprint for the life and deeds of warriors. We also encounter this version of the heroic warrior in the ritualized parading and sporting events seen on rock art panels in Scandinavia or on pottery and palace frescoes in the Aegean (see Chapter 5). Sports originate in the training of young warriors, and cattle raiding of competing non-allied communities was the accepted way of keeping local warriors busy. Taking service at more distant chiefdoms, if successful, might provide another way of returning home with fame and wealth to establish oneself as a local chief/farmer (Kristiansen and Larsson 2005: figure 95). However, warriors were also essential in providing protection for trading expeditions, whether on land or at sea. In addition, they could be mobilized as retinues along the lines of chiefly kinships/confederations to form larger armies when needed. The realities of a warrior life were often grim, as the evidence of trauma on skeletons from Middle Bronze Age burials and the Tollense site demonstrate (see Chapter 10). Helle Vandkilde provides an in-depth view on these dualities of warrior retinues in her postscript and their probable origin in third-millennium social changes throughout western Eurasia (see also Chapters 7 and 8).

BRONZE AGE WARFARE PAST AND PRESENT

The study of warfare in prehistoric and early historic societies has gained new momentum in the past ten years. It now spans use wear studies (*swords*: Bridgford 1997, 2000; Bunnefeld and Schwenzer 2011; Colquhoun 2011; Horn 2013a, 2013b, 2014a; Kristiansen 1978, 1984, 2002; Matthews 2011; Molloy 2011; Quilliec 2008; York 2002; *spears*: Anderson 2011; Horn 2013a, 2013b, 2014a; Schauer 1979; *daggers*: Dolfini 2011, York 2002; *halberds*: Brandherm 2011; Dolfini 2011; Horn 2013b, 2014b; O'Flaherty 2002; for more, see the edited volume by Uckelmann and Mödlinger 2011), experimental studies (Anderson 2011; Gutiérrez Sáez and Lerma 2015; Molloy 2007, 2008, 2009; O'Flaherty 2007; O'Flaherty et al. 2008; O'Flaherty et al. 2011) and analyses of combat-inflicted trauma and injuries on skeletons (Aranda-Jinénez et al. 2009; Cansi et al. 2009; Fyllingen 2003, 2006; Harding et al. 2007; Jantzen et al. 2011; Peter-Röcher 2007; Walker 2001). Nevertheless, such research has also been informed by interdisciplinary comparative studies of the role of warfare in pre-modern societies (Arkush and Allen 2006; Ralph 2013; Ton, Thrane and Vandkilde 2006). It therefore seemed natural to convene a conference on Bronze Age warfare in Gothenburg, in 2012, to take stock of the various expressions of warfare during this formative historical period when new specialized weaponry was introduced, such as swords, lances and chariots (Kristiansen 2013). Our aim was to demonstrate the diversity of expressions and effects of warfare in Bronze Age Europe by stressing social and historical contexts. The need to understand these contexts has recently been empha-sized: Vandkilde pointed out that in most human societies warfare was neither absent nor endemic. Thus, war and peace are not natural but cultural phe-nomena (Vandkilde forthcoming; see also Chapter 2).

However, we should not overlook the context of our own time. Why is warfare more prominent as a research theme today than twenty-five years ago? This was a time when peaceful trade and interaction studies were preferred over migrations, and the role of warfare was deemed to be of little significance. Bronze Age weapons were mostly thought of as symbolic, with few exceptions (Kristiansen 1984), and even studies, such as Keeley (1996) who confronted this peaceful myth of prehistoric societies, had little impact to begin with. According to Keeley, people in general became war-weary after World War II and the Vietnam War. Because the world they lived in could not deliver what they sought, then surely the past must have been a less horrible place. Thus, they started creating a world they ultimately wanted to live in. It could also be argued, however, that the ideology of a modern welfare society had no place for warfare, which was increasingly considered as something that belonged to the past (the two world wars). More importantly, Keeley's book started a debate from which an increasing research focus on the possible

evidence for warfare followed, from skeletal traumas to actual traces of combat. An edited book by Carman and Harding (1999) propelled such a development, and, in recent years, we have seen mounting published evidence in this field of research. This, however, was also a period when warfare suddenly resurfaced in Europe – from the Balkan civil wars in former Yugoslavia to wars following the collapse of the former Soviet Union. It thus seems inescapable to conclude that experiences from our own time influence how we prioritize research on the past, from migrations to warfare.

Since then, we have seen debates over the scale and implications of warfare in prehistoric Europe, where new empirical evidence has demonstrated a prevalence of violence in both societies with low hierarchies and even in organized egalitarian societies (Schulting 2013). The violent nature of Neolithic and Copper-Age societies has been demonstrated by a number of spectacular finds and findings, from the family massacre in a Corded Ware society in Eulau in Central Germany (Muhl et al. 2010) to similar massacres in Globular Amphora (Przybyla et al. 2013) and Linear Band ceramic communities (Christensen 2004; Petrasch 1999; Teschler-Nicola et al. 1997; Wahl and König 1987; c.f. Schulting and Fibiger 2012). One of the most famous prehistoric people, Ötzi, was apparently killed during an ambush in which he received an arrow in the back of his shoulder (Gleirscher 2014; Gostner and Egarter Vigl 2003). The early importance of archery and bladed weapons for the conduct of war or warlike violence is well documented in graves of the Italian Copper Age (Horn 2014b) but also elsewhere; for example, in the Danish Bell Beaker burials (Sarauw 2007). Thus, Morris in his latest book takes this evidence as a starting point for suggesting that warfare was far deadlier at the community level among pre-state societies and only became 'civilized' and with less casualties for the general population with the rise of states and organized armies/warfare starting during the Bronze Age (Morris 2014).

Our book demonstrates how warfare became increasingly professionalized during the Bronze Age and more or less a full-time occupation for warriors at a certain period of their lives (see, e.g., Salzani 2005). This moves the role of organized warfare known to us from the Iron Age and early historical period back another thousand years in time, and this will have a profound effect on our perception of European Bronze Age societies. This new understanding has been amply demonstrated by evidence for large-scale warfare and killing in the Tollense Valley in Mecklenburg, northern Germany (Jantzen et al. 2011; Jantzen et al. 2014; Terberger et al. 2014; see Chapter 10).

Even though specialized weapons are seen as an indicator of a more systematic and professional approach to combat (see Chapter 9), its implications in the creation of social institutions, identities and personal agency are rarely discussed (see Chapter 6). In short, warfare needs to be

contextualized. Prehistoric halberds have, for example, long been interpreted as ritual objects for people with high status. The fact that they appear in ritual depositions and rich burials has been used to preclude an interpretation as functional weapons. An a priori bias therefore inhibited the full understanding of what turns out to be one of the first specialized weapons in prehistoric Europe. Even though halberds were entangled in complex networks and social institutions, it was possible – using use wear analysis – to demonstrate that they were also deadly, efficient and widely used weapons (Horn 2011, 2014b).

It is the aim of this book to contextualize warfare in order to facilitate a holistic understanding of past societies, processes and agents. The presence of organized warfare, especially from the later Bronze Age onwards, is a less contentious subject. Therefore, our aim is not to 'prove' that warfare existed in particular societies, but to understand how warfare was interwoven with other processes and aspects and how it was tied into the social fabric, as through rituals (see Chapter 11) and identities (see Chapters 12 and 13). How did war affect the identity, status and ideas of self of individual agents?

THE CHAPTERS

Here follows a brief presentation of the following chapters. In archaeology, many questions are phrased in an either-or way that can easily lead to oversimplified models of interpretation. Harding (Chapter 2) tackles such oversimplification with a survey of the evidence for violent and peaceful encounters during the Bronze Age. He argues against any simplistic view of mobility and contact. Instead, he puts forward a model of interactions following complex patterns that allowed for a much more varied response from individual agents than any reductionist approach could cope with. The integration of violent and peaceful interactions and encounters provides a more vivid picture of life and mobility in Bronze Age societies. A significant number of papers address the relationships among mobility, trade and warfare. Starting with an 'edge-wise' look on weapons, in this case flange-hilted swords, Kristansen (Chapter 3) suggests that they were highly efficient weapons. Taking into account other weapons, such as the full-hilted sword and spears, he goes on to suggest a separation of warriors into fighters and leaders and, with that, a professionalization of fighting in war bands. In combining evidence for mobility and trade with the evidence for fighting, the chapter elegantly shows the interwoven nature of warfare and trade across Europe. With a wide array of ethnographic and historical analogies and demographic considerations, Kristiansen demonstrates the social impact of warfare: the strain of providing men and suffering victims for local populations, the organization of hierarchies and the exchange of goods and ideas.

In pointing to the relation of exchange goods such as amber and metals with specialized weaponry from the Scandinavian Late Neolithic/Early Bronze Age onwards, Horn (Chapter 4) argues that warfare and trade are not only related, but depend on each other. Warriors both protected and benefitted from trade, which therefore increased the demand for warriors. Ultimately, it developed new incentives for warfare to control trade routes. However, the microregional chances to participate in exchange are not equally distributed. Considering the early evidence of intensive and frequent use of specialized weaponry in combat, Horn suggests that deprived groups may have levelled unequal opportunities by waterborne raiding. This kind of competitive combat over exchange may have been responsible for some of the distribution patterns we observe in the archaeological record.

Ling and Toreld (Chapter 5) also highlight the connection between maritime mobility and warriors. In their contribution, they investigate Scandinavian Bronze Age rock art with the premise that warriors are enmeshed in complex networks of practice and therefore highlight the maritime connection of warriors. Newly discovered rock art panels from the Early Bronze Age provide evidence that warriors engaged in deadly combat, and the association of carvings of warriors and canoes in maritime positions demonstrates that crewing, seafaring and fighting were part of their practice. Following the approach of Alfred Gell, Toreld and Ling suggest that rock art has an agentive power that helped to sustain political power in maritime chiefdoms.

Molloy, too, keeps with the topic of warriors and mobility (Chapter 6), but focuses on technological solutions. He conducts a microanalysis of subtle differences within the group of the Naue-II swords, where he compares chemical composition, rivet holes, blade design and use. By adding observations on spears/lances and the cross-section of swords, he goes on to show that warfare kept people on the move, thus facilitating an overall pattern of similarity. Within these patterns of overall similarity, subtle differences, however, may point to diverse origins as well as local cultural and ethnic differences.

Also focusing on the technological aspects of war, Klimscha (Chapter 7) argues that innovations in metal casting and transportation during the early Bronze Age in the Levant provide evidence for an increase in the reach of exchange. With that follows a need to control this new space. He, too, is able to demonstrate the highly interwoven nature of trade and warfare in which one drives the other and vice versa. This development started before the advent of early states in the Southern Levant despite the absence of specialized weapons. He therefore concludes that the absence of specialized weapons does not mean the absence of specialized warfare.

In their contribution, Pitman and Doonan (Chapter 8) are concerned with how different aspects of technology are interlinked with warfare. They review

evidence for metal casting and warfare in the burial record of the Middle Bronze Age of the Southern Urals, including the famous Sintashta complex, and trace the relationship of agents of war and agents of metal casting (i.e., the metallurgist and the warrior). The *chaîne opératoire* of weapon production and use demonstrates how many daily activities are affected to at least some degree by warfare.

Gener (Chapter 9) also considers the technologies connected to war but addresses them closer to individual weapons and fighters. He points to how complex technology and the sheer amount of technological know-how are at the core of ancient sword use. Gener shows us how much time people spend with weapons outside fighting and how much human creativity is dedicated to the task of creating weapons that are more efficient.

That efficient weapons could have been made from perishable materials can be gleaned from the Tollense valley site. Here, Lidke and her colleagues (Chapter 10) join in the source critical warning to take the archaeological evidence of warfare, or rather its absence, at face value. The presence of personal objects such as ornaments has given rise to an interpretation of the Tollense valley as a sacrificial site. Drawing all the evidence together, the authors argue that, for the time being, there is no better explanation than to interpret the site as the remains of a Bronze Age battlefield dating to Period III. However, this does not preclude that some ritual activity may have taken place at the site, highlighting that there is not necessarily a separation between places of violent interaction and ritual.

This is a theme explored by Mörtz (Chapter 11). By calculating the minimal number of artefacts in what Mörtz defines as weapon hoards, he is able to show that they constitute meaningful combinations from the perspective of combat requirements. Use wear and theoretical elaboration on the practical use of barbed spearheads leads him to conclude that the British weapon hoards are intimately linked to warfare and combat. Discussing analogies from the Iron Age and the Classical period, Mörtz opposes the classical scheme of 'founder hoards' and 'merchant hoards'. Instead, he proposes an interpretation as sacrifices of war booties. Thus, he is able to interlink war intimately with ritual activities rather than seeing them as opposites.

By taking a fresh look at Mycenean graves and their connection to weapons and skeletal injuries, Georganas (Chapter 12) touches on a point also addressed by Kristiansen. He points to a divide between the warrior persona and those who actually fought. Assuming a warrior persona seems to be part of the identity of elite individuals who possibly were never really involved in actual combat. Conversely, injured individuals were not buried with weapons. In the light of this evidence, we may wonder how many individuals dying in fights were buried at all.

According to Bunnefeld (Chapter 13), we can observe a similar disparity between those showing off a warrior ideal and those who also fought in south Scandinavia and northern Germany. He contends that the sword should rather

be seen as the emblem of the identity of free farmers because they are numerous. Whether one agrees or not with his numbers, a substantial part of the population was under arms even when only accounting for swords. If we add contemporary spears, we could probably argue for a 'militarized' society in the Nordic Bronze Age, much in the way of Engel's Germanic mode of production (Gilman 1995), although this is not Bunnefeld's conclusion.

Most pointedly, Anderson (Chapter 14) argues for a theoretical deconstruction of 'the warrior'. Thus, she forces us to rethink what we mean when we write about 'the warrior'. Anderson unfolds a full theoretical discussion of the possible distinction between the warrior image and the fighter. In this model, *fighters* were engaged in real combat, whereas the *warrior* may be a mythical identification figure. It may mainly be a male identity, but that does not exclude females from taking part in actual combat. She also points to a bias in evidence for those who fought because fighters may not have received the same honours – for example, a burial – as those who managed to claim 'warrior status'. Therefore, a much larger portion of society may have been involved in fighting, a sentiment that finds support for the Nordic Bronze Age in the calculations made by Bunnefeld.

CONCLUSION

With this volume, we demonstrate that properly contextualized warfare was highly influential in the wider social arena. During the Bronze Age, warfare became embedded in social institutions and in the creation of a Heroic mythology that may have had little to do with day-to-day realities but nonetheless supported an institution of warriors and made risks worthwhile (Hansen 2014; see Chapter 15).

The international metal trade provided an additional arena for warriors, whether protecting or challenging such trade. Therefore, warfare had a deep transforming influence on Bronze Age societies, as reflected in the ritual veneration of warriors in both burials and hoarding practices. Once established as an institution, the Heroic warrior would gradually become a mundane soldier serving ruling chiefs to sustain power, trade and the protection of property. The consequences of this development in late prehistory might well be a theme for another conference.

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CHAPTER TWO

BRONZE AGE ENCOUNTERS: VIOLENT OR PEACEFUL?

Anthony Harding

I START FROM THE NOW UNIVERSALLY ACCEPTED PREMISE THAT THE Bronze Age was a time when frequent interactions were taking place in Europe: encounters between people, from near and far, occurred on a regular basis. While I do not go as far as some in accepting all the possible sources of evidence, or at least all the individual pieces of data that are said to prove these interactions, there are still plenty of reasons not to doubt that links between groups of people, large and small, stretched over longer and shorter distances in the Bronze Age. These include:

- The evidence of boats, such as the Dover boat (Clark 2004); this does not include log canoes or coracles, but refers to plank-built boats, or possibly skin-covered boats, if that is what the Scandinavian rock art shows. Clearly, the technology existed for transport by sea or river and must have been frequently used.
- Overland transport, although this is more difficult to demonstrate. Of course, there were wheeled vehicles and draught animals pulling them. Route networks have often been hypothesized based on find distributions (Sprockhoff 1930: Taf. 45).
- The transport of raw materials, notably metals but also amber. While the movement of copper has long been demonstrated, the movement of tin is usually assumed rather than proved; the Uluburun wreck showed that tin was moved around the East Mediterranean (Yalçin, Pulak and Slotta 2005: 572–575), and

the new finds from Salcombe, Devon, with many tin ingots among a collection of Bronze Age objects, show that the assumption of movement is justified.[1]

- The movement of manufactured goods: in the case of the Uluburun, pottery of many different origins; in the case of amber, spacer beads travelling to Greece from Central or Western Europe (this was a form that was probably only invented once: Harding and Hughes-Brock 1974).
- The movement of people: early work on Beaker people is now confirmed by, among others, the Amesbury Archer (Fitzpatrick 2011); in a Bronze Age context, the cemetery at Neckarsulm contained thirty-eight individuals, all young males, of whom twelve had non-local isotopic signatures (Wahl and Price 2013).
- Such isotopic work might eventually confirm the picture of 'Fremde Frauen' (women moving in marriage) suggested by Jockenhövel (1991).

In other words, there is abundant evidence that people were moving themselves, the materials they needed, and the goods they were producing. In this sense, we can argue that the Bronze Age world was indeed one of encounters between individuals, groups and possibly even larger groupings of people, although the latter is not easy to demonstrate until relatively late in the period; this bears directly on the question of warfare.

It is also unquestionably the case that major changes involving technology and subsistence occurred in the Bronze Age, but also – most evident archaeologically – changes in material culture. Such changes have often been taken to indicate population movements, although one must be aware that they may simply reflect changes in ideology or worldview. Examples include:

- *The Beaker period.* A period in which it is commonly assumed that a population spread rapidly and widely across Europe. This is perhaps now backed up by isotopic support (Price et al. 2004).
- *Upheavals in the East Mediterranean in the later thirteenth and twelfth centuries* BC which saw the decline and fall of the palace civilizations of Greece, Anatolia and the Near East, and the movements of the so-called Sea Peoples.
- *The start of the cremation rite as represented by the Urnfield phenomenon.* Here one recalls Wolfgang Kimmig's suggestion that there was a connection between the rise of Urnfields and the activities of the Sea Peoples (Kimmig 1964).

These are important matters because the arrival of 'new' people, in whatever form and by whatever means, brings with it the possibility of conflict between the new and the old. Is it possible to associate episodes of violence with the idea of new arrivals? In this, the evidence of violence on particular sites is potentially

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[1] The finds are not yet published; some images are available on the Internet, e.g., http://news.nationalgeographic.com/news/2010/02/photogalleries/100224-shipwreckbronze-age-treasure-salcombe-britain-pictures/. Earlier finds from the sea off Salcombe: Needham, Parham and Frieman 2013.

crucial. Among the places which deserve particular attention in this respect, the site of Velim, Czech Republic, is especially important, although other sites suggest that aspects of what occurred there took place at other key spots.

The evidence from Velim, although only partially published, is particularly telling (Harding et al. 2007; Hrala, Šumberová and Vávra 2000). The presence of numerous human skeletons lying in disorder in ditches and pits; the fact that the site, situated on a low hill, was enclosed by a series of ditches; and the presence of significant numbers of arrowheads on the site all suggest that Velim was the location of special activities which have plausibly been interpreted as war-related violence. Numerous human individuals were represented in both articulated and disarticulated form, young and old, male and female; that this was no normal burial site is indicated by a number of considerations including the practice of collecting crania and placing them in pits. A proportion of the human bones (a relatively small number has been studied so far) show patho-logical features, including stab and cut marks. Pottery indicates a date at the transition from the Tumulus period to the Urnfields – in Reinecke terms Br C2 to D, while the few available radiocarbon dates centre on 1400 cal. BC.

Parallels to Velim are few, but one site that appears markedly similar is the Cezavy hill at Blučina (Moravia) (Tihelka 1969; subsequent excavations by Milan Salaš are published in numerous interim reports); here, ditches contained plentiful human skeletons lying in disorder from a very similar time period, Br D (the early Velatice culture). Too little is in the public domain so far to explore the parallels more closely, and there are certainly differences in detail, but the overall effect is similar.

Other sites that might be included, such as the mass burial at Wassenaar in the Netherlands (Louwe Kooijmans 1993), are passed over in this paper, but the extraordinary situation in the Tollense Valley in Mecklenburg with its bronzes and human bones, some with notable trauma, cannot be ignored (Jantzen et al. 2011). Radiocarbon dating indicates the late thirteenth century cal. BC: a somewhat later date than Velim.

Are these situations one-offs? Certainly they are not the norm; one could not say that they appear as a frequent or recurrent element of the Central European Bronze Age. Yet they occur close to the time when we are witnessing the major shift that is represented by the change to Urnfields. So what is going on? Are these obviously violent encounters symptomatic of a wider ethos that pervaded the Bronze Age, or at least one part of it, in the time from the mid-second millennium onwards? Here, we can bring in a range of other individual pieces of evidence that are often used to support the idea of violent encounters, what we might call war (or at least conflict), as typical of the Bronze Age: the development of weaponry, trauma on human skeletons, and the rise of for-tifications are all things that have been used to suggest the rise of first the warrior and later the war-band, with at least some of them involved in

recurring episodes of violence (review of the evidence, with references: Harding 2007).

Now, you might think therefore that I have already answered the title of this paper: there were indeed peaceful encounters in the Bronze Age, and there were also violent ones. That much is obvious. But can we take this a bit further by contextualizing the encounters and thereby indicate some way of explaining why violence occurred at some periods and places and not at others?

In considering the period 1400–1200 BC, where all three sites I have mentioned fall, as well as the time leading up to the collapse of palace civilizations in the southeast of Europe, we could bring a number of factors into the argument: the increasing number of weapons (especially those that were specifically designed to hurt humans, notably swords and spears) and, conversely, the armour which was presumably intended to mitigate their effects, or the very large number of hoards which characterize the period immediately following the first century or so of Urnfield life (Ha A1 in south German terms) in the twelfth century BC. For this, the usual range of explanations are advanced, with most people nowadays preferring the ritual to other causes. But why this period in particular should have seen so very many hoards deposited has not been satisfactorily explained. It does, however, seem a big coincidence to find such a phenomenon present at a time when a big change in cultural practice was taking place. If we are looking at ritual here, should we be considering other aspects of ritual practice that characterize the period, including those that are war-related? Many authors have suggested that many of the encounters depicted on Swedish rock art are ritual in nature; some believe that much weaponry and armour was never intended for real fighting but rather for parade or display, perhaps ritually focused.

In what sense, then, was violence incorporated into Bronze Age life? While my sense that violence became an integral part of Bronze Age life during the course of the Bronze Age is based on the archaeological evidence I have mentioned, I am aware that such a sense is not an argument in itself. Here, I am indebted to a number of people, notably Helle Vandkilde and David Fontijn, for insights which they have developed and presented in recent years. Fontijn, for instance, asked exactly the same question as I have about Bronze Age warfare in the Low Countries, concluding that the larger number of weapons that can now be demonstrated to have existed does not necessarily reflect an increase in warfare (Fontijn 2005). It does, however, reflect the social values behind the weaponry, an 'ideology of martiality'. But, in his view, sheer numbers are not a good guide to the prevalence or otherwise of warfare.

The rise of the warrior – not just the fighting machine that is evidenced by the weapons and depictions, but the particular role within society and thus the identity that being a warrior represented – is something that several writers have argued took on its characteristic appearance during the Early Bronze Age,

perhaps emerging from the role of the hunter equipped with bow and arrows that we can see represented so vividly in the Copper Age. Being a warrior was much more than that, however. The notion of martiality has been explored a number of times, and its connection with, for instance, the use of the sword has been a particular theme. Fontijn and Fokkens (2007) suggested that the deposition of swords was rather rare (in comparison with the number that were in use) and perhaps happened at the end of a warrior's life or when he became an elder – at some notable transition point in any case. Fontijn (2005) has also suggested that an identity as a warrior (i.e., warriorhood) was not something fixed, but a fluid thing, perhaps temporary, and perhaps dependent on context. This is an interesting suggestion, although hardly one that is provable through archaeological evidence alone.

What happens if we juxtapose the warrior ideology, the notion of martiality and the major changes we think happened in Europe around 1300 BC? One question would be, how far advanced was the notion of warriorhood at this stage? I and others have argued that the process by which a hunter became a warrior was gradual (Harding 2007) and, furthermore, that the rise of fortified sites, along with the large quantities of weaponry that appear in the later Bronze Age, can be taken as an indicator that war-bands were becoming prevalent. But I would regard it as quite uncertain that this development had occurred prior to the start of the Urnfield period – yes, there were enclosed sites in the Early Bronze Age and much has been made of them; but hill forts in the sense we usually understand them are really a Late Bronze Age phenomenon (here I discount sites such as Spišsky Štvrtok in the Spiš area of Northern Slovakia, which I believe has been misinterpreted, although it is certainly true that some tells on the Hungarian Plain were surrounded by ditches). Could we then argue that what we call the Urnfield culture is driven by a new sense of martiality in which the individual warrior becomes part of a larger entity?

It is now a commonplace that war and warriorhood are powerful agents for social change. Apart from anything else, war is waged against the 'other', people who are somehow different, whether in appearance, language or simply beliefs. The 'otherness' of the Urnfield culture is most obvious in their burial rites, but it may have extended to other spheres that we cannot easily spot as well. In the context of what happened at Velim or Tollense, this may be critical.

This scenario at Velim might play out like this: the low hill was occupied from the Early Bronze Age with some indications of domestic dwellings and ordinary domestic debris on the site. The major period of occupation, however, was the later part of the Middle Bronze Age (Tumulus culture, but here without tumuli). At some point towards 1400 cal. BC, a series of violent events took place. Some people were injured with bladed implements (swords?), others suffered trauma from pointed weapons (arrowheads or spearheads) and still others suffered blunt trauma. Those who delivered these blows must

have been in possession of warlike implements, including bows and arrows and swords; to that extent, we can affirm their warrior identity. Now volleys of arrows can hardly have been fired by one or two individuals, so we must be talking about groups or bands of people. Is this the point at which we see the transformation of the individual fighting man into the more lethal warrior band? These were, of course, violent encounters. But, at present, we cannot tell at what scale such encounters took place over the wider canvas of Europe as a whole; in other words, whether the transition to the Urnfields was a matter of many small-scale conflicts – as Velim and Tollense might indicate – or a whole continent in upheaval, as the Kimmig model seems to suggest.

Whether this has anything to do with hoard deposition after 1200 BC is unclear, but the practice of placing goods in the ground was certainly well developed in the preceding centuries; it just took off in quantitative terms after that point. Indeed, the massive number of hoards in Ha A is almost a hallmark of the earlier Urnfield period and should probably be seen as part of the same ideological package that produced the war-band; both were indissolubly part of Bronze Age life. Just as warfare and warriorhood are agents in social change, so the deposition of hoards – especially of weaponry – was a practice that was socially embedded and impacted on the ability of groups to wage war – or at least to continue waging war. After all, it is hard to defend yourself if you have thrown your best sword into the river.

Forts, weapons and armour continued to exist and to multiply. We can still see the forts in the landscape today; the number of weapons appears large but is essentially an unknown quantity. In other respects, the presence of large undefended settlements during the Urnfield period would appear to indicate that, for many in the countryside (in other words, peasants), any encounters were peaceful.

Reconstructing the ethos of an age is a task from which we might justifiably shrink. Yet the twofold character of the period we are dealing with seems to suggest lines of enquiry that give us answers to which we might agree. There were indeed both peaceful and violent encounters in the Bronze Age, but our interpretation of them – deciding which was which – is very much an ongoing task. Given the advances that have been made in recent years in our under-standing of how the archaeological record relates to human behaviour, the omens are good that we will succeed in unravelling this key aspect of past human societies.

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WARFARE AND THE POLITICAL ECONOMY: EUROPE 1500–1100 BC

Kristian Kristiansen

THE BRONZE AGE WARRIOR

The Bronze Age saw the introduction of a number of 'classic' weapons that were to remain in use throughout the following millennia and up to recent historical times. These were swords and lances for attacking, and shields, helmets and bronze corselets for defending. For rapid transport, the swift horse-drawn two-wheeled chariot, manned with an archer and a charioteer, was introduced; it became a rapid and deadly firing machine. From the Urnfield period onwards, horse riding seems to become part of combat, linked to the heavier Urnfield slashing sword.

This package of military innovations reshaped Bronze Age societies globally from the ground up, not only changing the nature of combat and warfare, but also altering the social and economic demands needed to support it. New skills were needed along with specialists to master them – horse dressage to allow the charioteer to manoeuvre the chariot, carpenters to build the chariots. The new hand weapons – swords and lances – likewise demanded long and continued training, as demonstrated by the development of strong right arm muscular bone attachments already from the early Mycenaean period in Aegina (Manolis and Neroutsos 1997). We now find regular bone injuries from sword fighting and from lances in Bronze Age burials, just as we find swords and lances with frequent blade damage from combat and their subsequent resharpening. A more organized and lethal form of warfare had entered history.

However, the new Warrior Aristocracy also distinguished itself in dress and body culture. Razors and tweezers were introduced for the purpose of shaving and changing the appearance of the head and body, and large woollen capes were worn to additionally mark the new elite through dress.

We may thus conclude that the semi-professional warrior made his appearance in the Bronze Age, especially from the Middle Bronze Age onwards. To be a warrior was a specialized occupation for young males, and warriors would take service at foreign courts as mercenaries. Evidence is found in strontium isotope analyses from a male cemetery from 1200 BC at Neckarsuhm in Germany, where more than one-third of the males – assumed to be warriors, although not all had weapons – had a non-local origin. They formed part of a retinue because they shared the same healthy diet (Wahl and Price 2013). It is also shown in the rapid global expansion of new, efficient sword types. The flange-hilted sword was in use from Scandinavia to the Aegean during the period 1500–1100 BC, suggesting a vivid exchange of knowledge about warfare and combat practice, but also testifying to travelling warriors and mercenaries.[1]

A NEW WEAPONS TECHNOLOGY AND THE ASSOCIATED SOCIAL CHANGE

Flange-hilted swords can be characterized as relatively long and heavy weapons with distinctive parallel cutting edges and a thick cross-section. Flange-hilted swords are functional warrior swords, and, from their beginning around 1500 BC onwards, they often display traces of use and damage from actual combat (Kristiansen 1984; Molloy 2007, 2010; Uckelmann and Mödlinger 2011). Figure 3.1 compares the degree of blade resharpening due to combat in Central Europe and northwestern Jutland during the period 1500–1150 BC. It shows that these swords were used in combat because they always have razor-sharp blades, even the new pieces, and it also shows that they were apparently more heavily resharpened in Jutland than in Central Europe. Sometimes they have small notches on the blade, the traces of combat, that sharpening could not eliminate.

These technological features make them robust, stable and resistant to bending. They were longer and heavier than other swords of their era, the

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[1] The evidence from this article and from thousands of warrior burials during the European Middle Bronze Age squarely contradicts recent 'Romantic' attempts to deconstruct the institution of warrior chiefs and retinues during this period and replace it with relational and unbounded identities (Brück and Fontijn 2013). The overall ritual and institutional regularity of warrior burials stands in no contradiction to small-scale individual variability and temporal changes in rituals (Bergerbrant 2007; Kristiansen 2012). Brück and Fontijn thus confuse archaeological variability with theoretical variability, and, in addition, they seem unable to envisage their own theoretical stance as being just as rooted in modernity as the one they criticize.

Use wear/resharpening of Central European
and Thy flange-hilted swords

Central Europe (% based on 64 samples)   Thy Swords (% based on 29 samples)
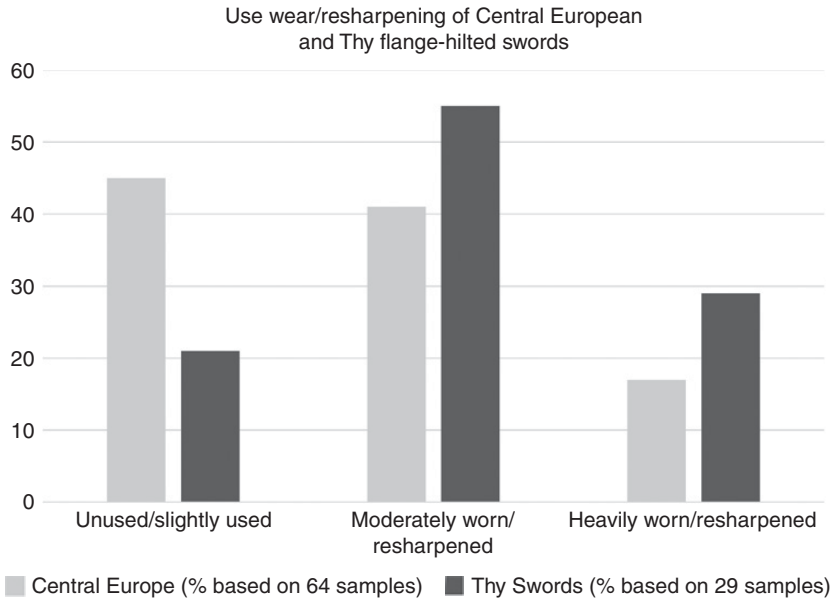
3.1: A study of resharpening of a group of Central European Swords of both type I and II (1500–1150 BC) (mainly from the National Museum in Budapest and some provincial museums in Hungary) compared to a small sample from Denmark in northwest Jutland of the same period, but with more type II swords. It shows that swords were used in combat and that they were in slightly longer use in Denmark/Thy than in Central Europe.

blade was typically 60 cm long, and their balance points were located significantly further away from the hilt, thus allowing more kinetic energy to be transferred to the tip of the blade and therefore offering better armour-penetrating power (Kristiansen 2002; see Chapter 9). For these reasons, it has been argued that the appearance of flange-hilted swords, equally suitable for thrusting and cutting and for close hand-to-hand combat, marks a significant change in fighting techniques among Late Bronze Age societies (Drews 1993). A significant change took place around 1350/1300 BC when the blade became wider and heavier and therefore more suitable for slashing than thrusting. This is the Sprockhoff type II/Naue II sword, which became the preferred warrior sword in the coming centuries. Studies of blade damage and resharpening show that these were functional warrior swords frequently used in combat (Kristiansen 1984, figs. 6 and 7).

As mentioned, flange-hilted swords were highly functional weapons, versatile and efficient in combat but also relatively easy to manufacture. Therefore, they quickly became the weapon of choice for a class of professional warriors that likely sought profit as raiders and mercenaries (Kristiansen and Larsson 2007). These highly mobile warriors can be assumed to have been a driving force behind the rapid spread of weapons technology, and there is no doubt that its international distribution from Northern Europe to the Aegean is truly

remarkable. Most significantly, these professional warriors must have been at least partially responsible for many profound cultural transformations of their societies of origin by bringing back new impressions, ideas, innovations and material wealth from their voyages. These assumptions are supported by the many finds of Greek armour, such as greaves, corselets and helmets, as well as Mycenaean swords and rapiers, that have been found in the Balkans and in Central Europe from the Late Bronze Age (Clausing 2003; Suchowska-Ducke 2013) and may be interpreted as evidence of warriors returning home. This warrior heritage is perhaps most impressively preserved in the numerous graves of Denmark and North Germany, many of which contained flange-hilted swords with signs of sharpening that clearly indicate their regular use in combat (Fig. 3.1), but also that full-hilted swords were symbols of social status and political leadership (Kristiansen 1984, 2002).

MOBILE WARRIORS AND THE ORGANIZATION OF WAR-BANDS

We see the formation of an international warrior culture for the first time during the Bronze Age, which indicates intense networks and interactions between warrior groups throughout Europe. This can easily be demonstrated by distribution maps of specific sword types, such as flange-hilted swords or octagonally hilted swords from the fifteenth and fourteenth centuries BC (Quillfeldt 1995), which connected Denmark and south Germany/Central Europe. These networks were linked together through marriage alliances, testified to by so-called Foreign Women (Jockenhövel 1991; Kristiansen and Larsson 2005: fig. 107). What has been less discussed is the distribution of similar types of swords between these chiefdoms, which are much more numerous than the few examples of 'Foreign Women'. How are we to understand the role of warriors in relation to such trade networks?

Warriors were apparently on the move, and they were moving much more frequently and over much longer distances than women, but in what capacities? They could have accompanied trade parties/caravans to provide protection, but they could also have been warriors seeking their fortune as 'mercenaries' in other chiefdoms. Such movements have recently been testified to by a male cemetery at Neckarsulm which held more than fifty individuals. Here, strontium isotope analysis demonstrated that around one-third of the buried males who could be measured were non-local; that is, that they had a foreign origin. Based on the different strontium values of these non-locals, they came from more than one location, some of possibly far away. They were most probably warriors who had taken war service at a foreign chiefly court because all of the buried men shared the same healthy diet and were above the average height. More interestingly, there were many double, and even triple, burials, which suggests that they died in combat and were buried together, locals and

non-locals alike. Most of the males were between twenty-five and forty years old, a few younger and a few older (Wahl and Price 2013). There were three sword graves, lying by themselves, which may represent the war leaders for an entourage or retinue of three warrior groups with around fifteen to twenty members in each (Knöpke 2010).

In the course of the thirteenth century, we also find evidence of Central European/Italian flange-hilted swords in the Aegean. With reference to later historical parallels of Celtic and Germanic mercenaries who returned home with Roman weapons and prestige goods after their service had ended, we are justified in interpreting Greek armour in east Central Europe during the late fourteenth and thirteenth centuries BC as similar evidence of returning mercenaries from the Mycenaean palaces where Central European and, not least, Italian flange-hilted swords testify to their presence in the same period. They also brought with them their local pottery traditions, as demonstrated by Italian-style pottery in several areas of the East Mediterranean (Jung and Mehofer 2013).

Ethnohistorical evidence of warrior cultures supports such an interpretation of young warriors and traders on the move, often on the peripheries of states and empires (Andren 2013). Warriors often formed special group identities (sodalities) that linked them in a spatial network defined by rules of special behaviour and etiquette. This could be employed both for recruiting war-bands and for travelling to more distant chiefs to earn fame and foreign prestige goods, as shown in Africa among the Masaai, among the Japanese Samurai, and as a recurring feature in the literature on warriors and warfare. Thus, we find the institution of youth war-bands in many Indo-European–speaking ancient societies. When sons cannot inherit the home farm, they have to find another outlet, and their organization into young war-bands carrying out seasonal trade and plunder expeditions is a well-known phenomenon from later periods. It also finds support in many Indo-European texts that describe the organization of such armed young warrior sodalities from India to Europe (Falk 1986; Kershaw 2000), probably with roots in the third millennium herding societies of the steppe and an important mechanism behind their expansion (Sergent 2003).

The nature of this institution was recently summarized as follows: 'In the Indo-European past, the boys first moved into the category of the (armed) youths and then, as members of the war-band of unmarried and landless young men, engaged in predatory wolf-like behaviour on the edges of ordinary society, living off hunting and raiding with their older trainers/models. Then about the age of twenty they entered into the tribe proper as adults' (Petrosyan 2011: 345). The activities of the young war-bands were seasonal; in the other part of the year, they lived within their households and communities, perhaps engaged in herding animals and other forms of farm labour (Holst et al. 2013).

Once they entered the ranks of adult warriors, they could choose to engage in various forms of trade, plunder or war service, perhaps returning home with enough prestige and wealth to establish their own households. This was a more promising alternative than remaining commoners without their own property. Early Viking Age raids alternating with trade belong in this category: before nobles and kings such as Sven Fork-beard took control, unified the forces and conquered England 200 years after the beginning of the Viking raids, many of them turned into a migration of free men without their own households. However, during the early period of Viking raids, to 'Go into Viking' meant to join the seasonal raids with the prospects of returning with more wealth or losing your life. In this way, the youth war-bands would turn into professional warrior bands, and they would remain a constant source of potential disruption unless hired by powerful chieftains. Their preferred weapon during the period 1500–1100 BC was the flange-hilted sword. Its distribution therefore tells us about warriors on the move, but also about the trade routes that they protected or were in charge of in much the same way as the characteristic Viking swords (Androuschchuk 2009). It raises the questions of the scale at which trade and warfare took place and of how many warriors could eventually be mobilized.

HOW MANY WARRIORS COULD BE MOBILIZED?

In some regions of Europe, the evidence of weapons in graves and hoards is extensive and therefore so representative that we can begin to calculate how many warriors and weapons were in use at a given time period.

Around 2,000 swords were preserved in Denmark from the Middle Bronze Age 1450–1150 BC, nearly all from burials (Thrane 2005). During this time period, 50,000 barrows were constructed, 10–15 per cent of which have been excavated or yielded burial finds. We can therefore expect that the real number buried is rather close to 20,000 swords (Bunnefeldt 2013). If we assume a lifespan of one generation or twenty-five years for each sword, a very long period, at least four swords were needed per 100 years in a warrior family, suggesting twelve to fifteen swords over the 300-year period that we are dealing with. It implies that 1,300 swords were always in use at any time during these 300 years, which more or less corresponds to the number of parishes settled during the Bronze Age. The swordbearer would be the local war leader of the parish, with a retinue of warriors armed with spears and probably also one or two more with a sword. The lance/spear had been the preferred weapon for traditional warriors since the Early Bronze Age (Horn 2013).

We can also approach the relationship between swordbearers and dependent farms/warriors with lances from the perspective of settlements, which in the Danish Bronze Age were based on individual farmsteads of varying size, with households of from ten to fifteen people down to five to ten people.

On average, there was one farm per square kilometre (Holst et al. 2013). If little more than half of the area was settled (Denmark comprises 44,000 km^2), then around 25–30,000 farms, from the largest to the mostly smaller farms, existed at any given time during this period in Denmark. This gives us one war leader for every twenty to twenty-five farms who would have provided the retinue or the war-band at the parish level. Even a smaller chiefdom could quickly muster an armed force of a few hundred warriors. It could also be argued that only the top ranks of farms were allowed to supply warriors, and then we are probably down to five to ten farms per swordbearer; this is closer to figures from Germany and also closer to figures from rock art ships, which suggests six to ten paddlers as the most common crew size (Ling 2012). The normal raiding war-band would be rather small – fifteen to twenty, if we take some hoard depositions of lances as our estimate (Harding 2007; Horn 2013) – but the numbers that could be mobilized in cases of larger armed conflicts would depend on political organization, which I discuss later. Such a distribution of sword-bearing warriors in graves and in real life corresponds well with the Viking period, especially in Norway and Sweden (Androuschchuk 2009). Here, sword graves display a distribution very similar to that of the Bronze Age in Denmark and represent leading farms. Their distribution follows the trade and migration routes west and east.

What I have demonstrated is that Bronze Age societies in Europe were heavily armed and that the number of weapons in circulation at any given time was in the tens of thousands or even hundreds of thousands, if we take Denmark – a small but rich country – as our reference. Therefore, we should also expect to find evidence of the victims of war, which is indeed the case.

VICTIMS OF WAR

In recent years, we have acquired completely new knowledge about combat trauma on skeletons and also about the number of victims from different kinds of combat and battle.

At the Middle Bronze Age cemetery Olmo di Nogara in northern Italy, 116 male skeletons were analysed: half of them had swords of the flange-hilted type, including the early form with a short hilt. Around 16 per cent of these individual showed lesions on bones/cranium from combat, mostly from sword cuts and arrowheads (Cansi, Gaspari and Maino 2009, 2010). When one considers that a person can easily be killed without hitting a bone (from a lance or an arrow), 16 per cent is a high figure, and it suggests continuous local warfare. Warriors with flange-hilted swords were here taking an active part in combat. This corresponds to the weapon graves in the B-circle at Mycenae, which showed that the chiefly warriors were active in battle, with frequent injuries and early death as a consequence.

However, more merciless mass killings also took place. At Velim in the Czech Republic, a small fortified settlement yielded numerous dead bodies, apparently killed around 1400 BC (Harding et al. 2007). Another example is found in Sund, western Norway (Fyllingen 2003). Here, a mass grave of more than thirty individuals from the late Middle Bronze Age showed that a whole community of men, women and children were massacred around 1200 BC. Lesions showed fierce combat among the males, who were sword warriors, several of whom had healed lesions from previous combat. Some people showed signs of starvation, and we may perhaps see control over basic resources as a background for the fighting. A tumulus gravefield nearby from the same period shows south Scandinavian contact and swords.

Finally, a major battle also took place around 1250 BC in Mecklenburg, northern Germany, on a small river valley at Tollense (Jantzen et al. 2011; Jantzen et al. 2014). Here, excavations from the river have so far produced more than a hundred skeletons or parts of individuals over a 2-km long stretch; many more are expected. Here, a whole army of all ages was deposited in the river, most of whom had been killed in battle with arrowheads to the body; others were apparently executed after battle with wooden hammers to the skull. Perhaps this was a migrating group seeking new land during a period of dramatic changes throughout Europe, which I discuss later.

We are thus presented with evidence of structured warfare from small-scale combat to large armies confronting each other. In this respect, the Bronze Age is not so different from the following Iron Age or Viking Age.

WARFARE, TRADE AND CHIEFDOM CONFEDERACIES

These well-documented incidents of Bronze Age warfare must be put into a social and historical context to be understood: in short, we need to consider the role of warfare in the political economy, here defined as the structured, institutionalized execution of power (Earle 2002). According to Kristiansen and Earle (2015):

> [A] political economy approach seeks to understand the linkage between the society's economy, power, and institutional structure as it unfolds both vertically (complexity) and horizontally (networks). In simple terms, this approach identifies the different horizontal and vertical social groups and their associations with contrasting interests. Fundamental is to understand the potential for different social segments to control in part the flows of resources that are used to support (finance) the political standing of different social segments. This ability to control economic flows in both subsistence and wealth depended on the creation of social institutions with specific cultural formations most importantly involving property rights and the formation of a new type of warrior aristocracy/institution to protect them.

Thus, warriors played an essential role because they had many functions during the Bronze Age:

- The most important was to control trade and its valuables – from metal to amber and salt. Every community needed it.
- To secure trade routes, you also need to control your peers along the route – peacefully through alliances, but with the potential to use violence if someone wanted to shift their loyalty.
- At the local level, it boils down to controlling/protecting producers and labour in order to sustain chiefly power bases and the production of surplus to feed warriors, participate in trade and the like.
- Therefore, farms in Northern Europe were now building byres for cattle, the most costly wealth. Village settlements were often fortified in Central Europe to protect both people and wealth.
- However, warriors and traders would travel and offer their services to the highest bidder. They therefore represented a potentially disruptive force that could change local power balances and, in the long run, also regional power balances.

To better understand the role of warriors and warfare, the two dominant forms of political economies during the Bronze Age – and indeed during later prehistory – must be outlined: *centralized* and *decentralized* (Kristiansen 1984, 1998: fig. 18; Kristiansen and Larsson 2005: chapt. 8.1). These are their main attributes:

- *Decentralized*: Complexity without major centres
  - Spatially distributed power and ownership
  - Movable leadership and wealth
  - Horizontal cosmology
- *Centralized*: Hierarchical structure around major centre
  - Concentrated power and ownership
  - Concentrated leadership and wealth
  - Vertical cosmology

It should be stressed that these are ideal forms, and many overlaps occur, just as a certain cyclical change between the two forms can be observed throughout history. A decentralized political economy would need institutions that allowed the control of larger segments of trade routes; in short, political confederacies. Blair Gibson defined it as follows: 'A Chiefdom confederacy consists of a number of genealogically related and unrelated chiefdoms which were unified through coercion or common agreement' (Gibson 2011: 217). Gibson's results further suggest that chiefdom confederacies had an impact on the nature of later archaic state formation, which would often be federal or feudal in character, with weak kings, as known from the Slavs and the Vikings.

Confederacies represent a political institution with a long history stretching from nomads to chiefdoms and tribes. Confederacies are often linked to more heterarchical chiefly formations that I would term 'decentralized' (see Kradin 2011; Grinin and Korotayev 2011, for good discussions and examples). Chiefly confederacies were recently subject to a comparative study by Blair Gibson (2011) who used evidence from Celtic Iron Age Ireland, Archaic Greece, Korea and Iran, and from ethnographic cases in the Pacific. Confederacies could be employed in the formation of a larger composite chiefdom, geographically coherent, as in Ireland, or they could be employed to link chiefdoms together in linear geographical space, as in nomadic or maritime confederacies, to secure trade. Bronze Age confederacies belong in the latter category. We will never know how many chiefdoms made up a confederacy during the Bronze Age, but it may be suggested from the map of 'Foreign Women' (Kristiansen and Larsson 2005: fig. 107) that it could encompass a handful of chiefdoms stretching from south Germany to Denmark. It may also be suggested that composite chiefdoms would be the strategy followed by the more centralized political economies of east Central Europe, a form that invited attempts at monopolizing rulership and the creation of archaic states or complex chiefdoms. This is perhaps what we see during the late fourteenth century BC (discussed later). I have previously exemplified these different forms of political economies (Kristiansen 1998: figs. 224 and 225), but here I want to go into more detail about their relationship to trade and warfare, and I shall employ use-wear analysis of Central European full-hilted swords as a proxy for access to bronze, which will be combined with a discussion of the most recent evidence from settlement studies and studies of warfare.

THE TRANSITION FROM TUMULUS TO URNFIELD POLITICAL ECONOMIES

We now consider the role of warfare during the historical transformation of political economies that took place during the late fourteenth and early thirteenth centuries BC.

Two distinct sword types connect southern Central Europe and south Scandinavia during the fifteenth to fourteenth centuries BC: the full-hilted sword with an octagonal hilt, and the flange-hilted sword, both of south German/west Central European origin. These were proposed to have been linked to two different types of travel, trade and mercenary, but with obvious overlaps and modes of collaboration between them. Their distribution is matched by a similar distribution of 'Foreign Women' who married into neighbouring chiefdoms along the route as part of the construction of political alliances/confederacies to create secure conditions for travellers and traders (Jockenhövel 1991; Kristiansen and Larsson 2005: fig. 107). At the same time as

the Nordic zone rose to dominance and wealth, Baltic amber appears in large quantities in graves from south Germany to the Aegean. The Nordic zone had something the south craved and was willing to pay for with an export of huge amounts of metal. This richness in supplies is demonstrated by the stable balance between octagonally hilted swords with no use-wear, swords with moderate use-wear (part of the decoration worn away), and heavy use-wear (nearly all decoration has disappeared; Fig. 3.2). In Denmark, there are even regions with more swords without use-wear (Kristiansen 1978: fig. 2). The distribution of octagonally hilted swords suggests that traders from south Germany were settling in Denmark and were active in organizing long-distance trade in collaboration with warriors of the flange-hilted sword.
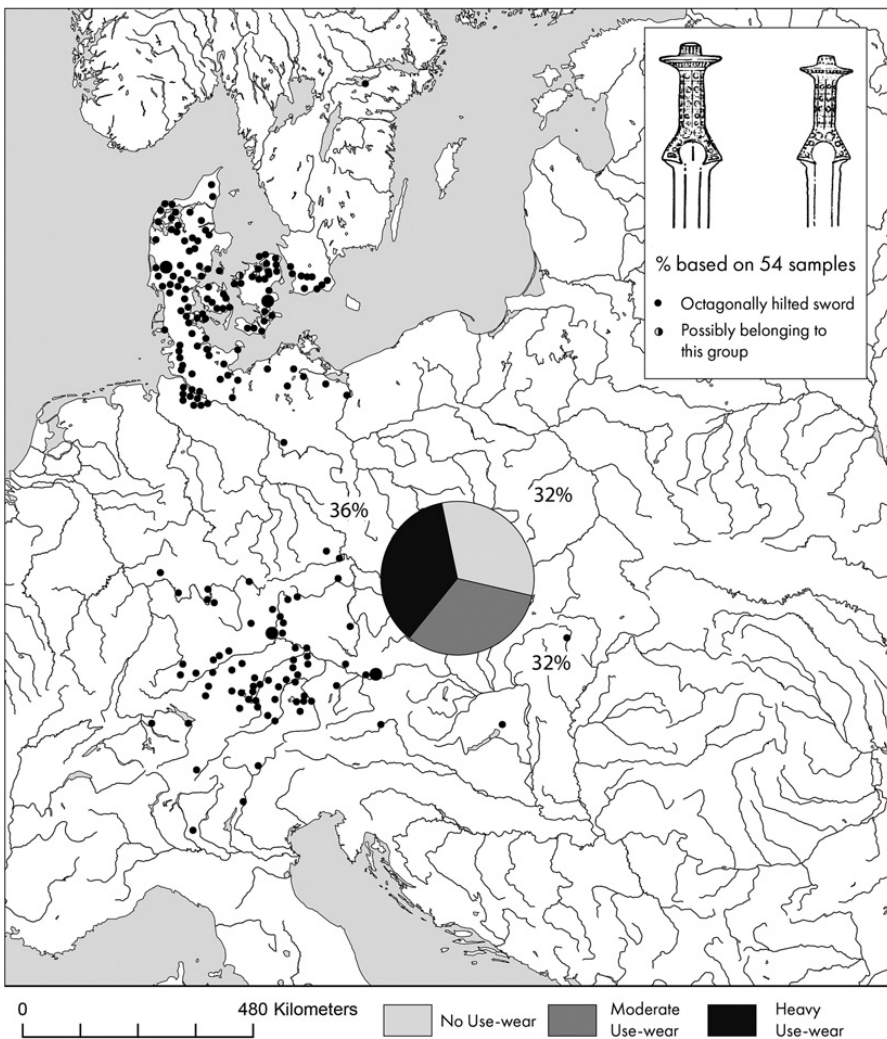
3.2: Distribution of octagonally hilted swords of Period II and their use-wear.

It is therefore not surprising that Europe and the Aegean during the fifteenth to fourteenth centuries BC shared the use of similar efficient warrior swords of the flange-hilted type, as well as select elements of a shared lifestyle, such as campstools. Linked to this are also tools for body care, such as razors and tweezers, and the whole Mycenaean package, including spiral decoration, was most directly adopted in south Scandinavia after 1500 BC, thus creating a specific and selective Nordic variety of Mycenaean high culture that was not adopted in the intermediate region (Kaul 2013). This could hardly have come about without intense communication and practice by travelling warriors or mercenaries. Swords come in different types with different fighting styles (Kristiansen 2002; Molloy 2010). Therefore, they are not easily adapted to: they are part of a system of warfare and skills that demand long-term training. They further demand changes in social organization in order to sustain the new role of warriors. It therefore seems likely that warriors were also traders at the same time, or they accompanied traders to protect them. We may therefore accept that the shared use of sword types between Scandinavia, Central Europe and the Aegean during this period would also have led to similarities in the social institutions linked to warriors. This indeed seems to be the case: the dual organization of leadership between a Wanax and a Lawagetas in the Mycenaean realm is replicated in the Nordic realm, which also copied Mycenaean material culture most closely (Kristiansen and Larsson 2005: chaps. 5.4 and 6.5). However, we should also be open to the possibility that this dual organization was part of a shared Indo-European Bronze Age tradition (Kristiansen 2013).

The stable conditions of the 'golden' period II came to an end after 150–200 years of wealth expansion and consolidation of power for the ruling chiefly elites. During Period III, 1300–1150 BC, a dramatic change took place in the supplies of bronze in the decades after 1250 BC (HaA1). The old network with southern Germany, which had secured a steady flow of metal for amber during most of the fifteenth and fourteenth centuries BC and provided opportunities for warriors and traders to travel both ways, was cut off due to warfare linked to social and religious reformation throughout east Central Europe. The archae-ological evidence for this is twofold: the successor of the octagonally hilted sword, the Riegsee full-hilted sword, never reached Denmark, although we suddenly find a group of Riegsee swords in Slovakia, the new hub for contacts to the north (Figure 3.5). We may interpret this as an attempt to forge new political alliances, but it is perhaps also a result of new east–west hostilities on a regional scale. At the same time, we see a geographical expansion of hoarding (Hansen 1994), which was an old ritual tradition in the Carpathians, but now also occurred in central Germany and former Yugoslavia, suggesting either the intrusion of a new people from the Carpathian basin and/or new hostilities. Warrior burials continued in the area of the former Tumulus Culture in the Nordic zone, as well as in the Aegean, and this suggests the continuation of old

social and ritual traditions (Sperber 1999). The large site of Bernstorff in south Germany, one of the central hubs of trade, was heavily fortified around 1340 BC, but shortly afterwards it was burned down and abandoned. Bernstorff was the largest fortified settlement in south Germany/west Central Europe during the Middle Bronze Age, encompassing 14 hectares. Originating from the early Middle Bronze Age, its huge fortifications were constructed in the middle of the fourteenth century BC, when the power balance between east and west Central Europe was changing; it was devastated shortly afterwards and burned down along 1.6 kilometres of its length (Bähr, Krause and Gebahr 2012). We will probably never know who its enemies were, but we might suspect them to be outsiders because, at the same time, we find evidence of major upheavals in east Central Europe.

Huge metal hoards containing up to one ton were deposited in the Carpathians and Transylvania, testifying to the collapse of the traditional metal distribution system. At the same time, in the west, in south Germany, full-hilted swords of type Riegsee and Dreiwulstschwerter were becoming increasingly more worn on the hilt because they had to be kept in circulation longer (Figs. 3.3 and 3.4). From Riegsee to Dreiwulstschwerter, the number of heavily worn swords increased to nearly 50 per cent, which corresponds to similar figures in Denmark (note 1) (Kristiansen 1978: fig. 3). This should be compared to the previous period, when there was a balance of unused, moderately and heavily worn swords (Fig. 3.2; Kristiansen 1978: fig. 2). This increase in circulation time is a sure sign of declining metal supplies due to a rather long-lasting breakdown of regular trade. In addition, these later types of full-hilted Central European swords rarely came to Northern Europe. They testify to a new east–west Central European network, one with a high degree of stylistic and formal homogeneity among swords, thus suggesting few workshops or imitation (Stockhammer 2004: chapt. 6). These later full-hilted swords were more often used in combat and show signs of blade damage and sharpening (Mödlinger 2011).

It was in the Nordic realm, however, that the unstable supply of metal during the thirteenth century BC was felt most strongly: here, a whole generation of full-hilted Nordic swords had to be kept in circulation for a prolonged period of time. As a result, their hilts were completely worn down, and the bronze was worn away in several places as well, laying bare the inner clay core of the casting. This phenomenon can be observed throughout south Scandinavia and northern Germany during Montelius Period III, and it is well-documented through drawings in the Aner and Kersten volumes. Figure 3.5 shows such a sword from Thy. They were finally deposited in burials towards the end of Period III during the twelfth century BC, when supplies were again becoming stable through political alliances with the Carpathian region.
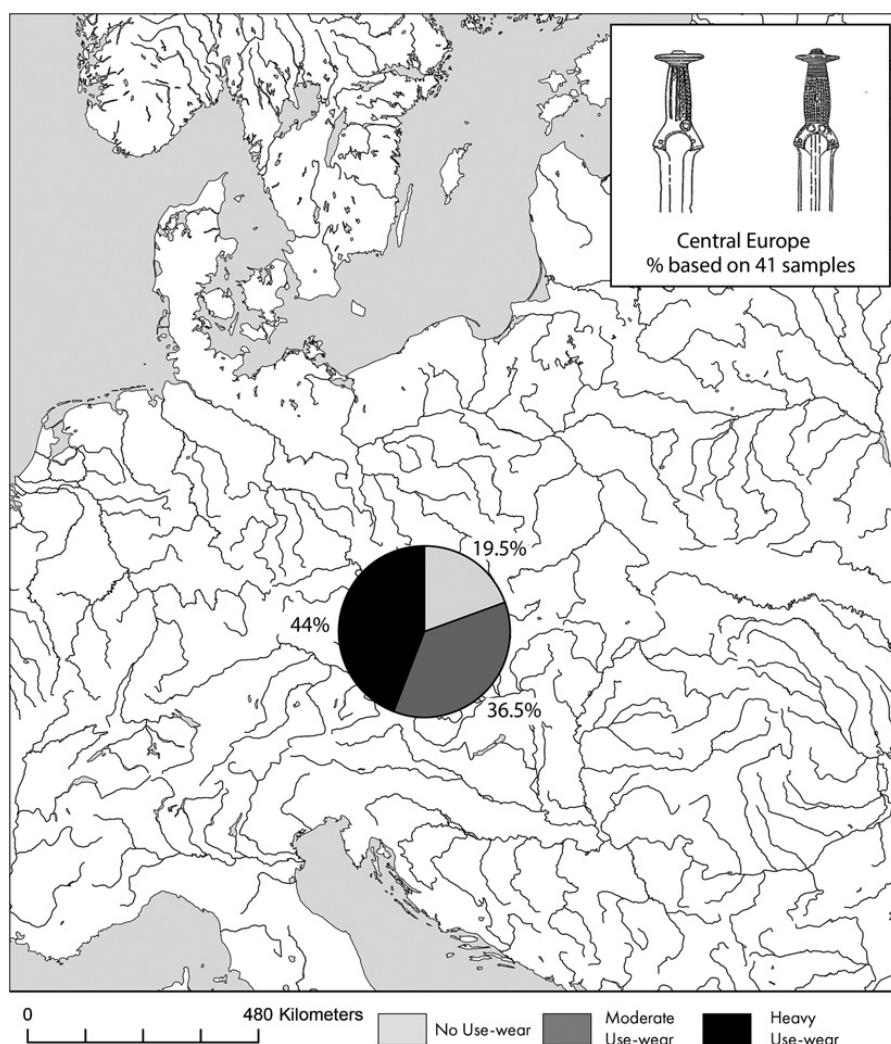
3.3: Use-wear of Riegsee swords.

These dramatic historical events tended to undermine the authority of ritual chiefs in the Nordic zone, whose power was linked to control over rituals and over metal that was now becoming sparse; conversely, warriors might benefit from taking part in raids and returning with riches from booty. In this way they could mobilize alternative wealth from raids and plunder, whether at home or as mercenaries in Central Europe or the Aegean, where flange-hilted swords testify to the appearance of warriors from the north, mainly from Italy, but also from Central Europe (Clausing 2003: Abb.2; Jung and Mehofer 2013). As return payment and booty, they would bring new body armour to Central Europe (Goetze 1984; Clausing 2003: Abb. 4). Thus, after the deposition of the last generation of full-hilted Nordic swords towards the end of Period III, we see
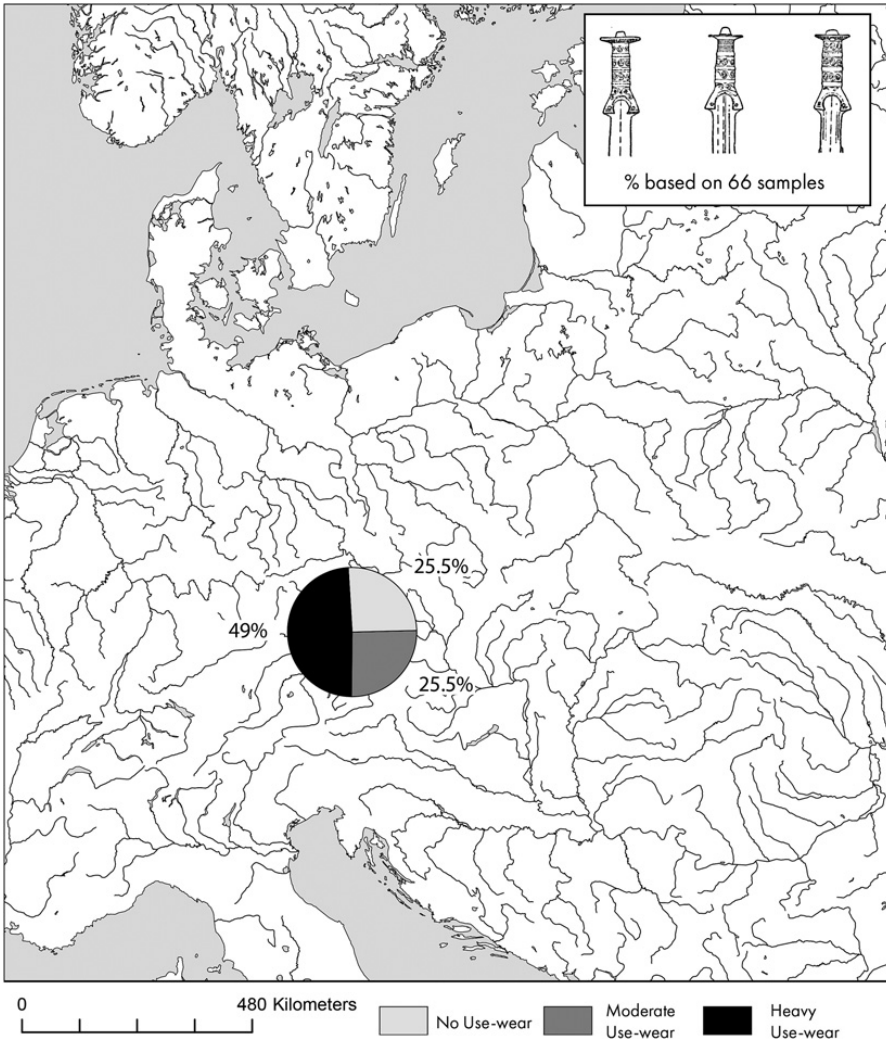
3.4: Use-wear of Dreiwulst swords.

a major reorganization of burials rituals. From here onwards, urn burials become the norm, and large objects such as swords were no longer deposited except in rare circumstances. The construction of the thousands of barrows made of grass turf also came to an end, except for a few elite burials. A new political and ritual regime with less boasting about power had taken over, probably due to a centralization of power in fewer hands, but also influenced by an accelerating ecological crisis (Holst et al. 2013). This corresponds to similar changes in Central Europe (Clausing 2005), where the elites now shared international prestige goods for drinking and feasting (Metzner-Nebelsick 2003).

Once this new trading network was established, it flourished, persisting during Period IV of the Nordic Bronze Age (Kristiansen 1998: figs. 42–45).

3.5: Photo of a Period III full-hilted Nordic sword from Thy, northwestern Jutland, showing an extreme degree of use-wear. The bronze is worn through on the upper part of the hilt, laying bare the inner clay core.

During Period III, it exhibited the same characteristics as the former Period II network: there is a concentration of swords and Aegean imports/imitations in Slovakia and the Carpathian basin, and then there is another heavy concentration in Denmark and Mecklenburg, with an empty stretch of several hundred kilometres in between. Again, it suggests directional and regular trade connections between these two rich and powerful regions. Hammered bronze vessels of various types produced in the Carpathian zone reached the Nordic zone in quite large numbers and testify to the elite level of trade (Metzner-Nebelsick 2003). In the Nordic zone, Mecklenburg rose to dominance during Period III, and it is therefore not surprising that hostilities would occur in this region – as witnessed in Tollense. In the following, we shall therefore discuss in more detail the possible historical processes leading to this major change in trade routes (and religious beliefs) during the late fourteenth and early thirteenth centuries BC.

New Forms of Warfare and New Forms of More Centralized Government Go Hand in Hand

Traditionally, Bronze Age warfare was mostly local and linked to raids and oppression using small war-bands of typically fifteen to twenty lance-carrying infantry, with one or two sword-carrying commanders. From Period III, they might have been on horseback. This pattern of small war-bands can be traced from the early Middle Bronze Age down to the Late Bronze Age (Harding 2007; Vandkilde 2013). What we see now with the Urnfield period is the beginning of more organized battles with hundreds or even thousands of warriors. This only makes sense: if you were to control your enemy's territory after a conquest, you needed centralized settlements housing all major institutions and functions needed to govern and control a larger territory, eventually supported by smaller local forts. This form of government started on a smaller scale in the Carpathian basin with the tell cultures during the Middle Bronze Age (Earle and Kristiansen 2010) and reached a new momentum in the very same region by the fourteenth century BC, which led to settlements and increased population.

New Forms of Settlement and Increasing Population Densities

Corneşti Iarcuri in Transylvania represented a new form of proto-urban settlement of a size never seen before or until the historical period. This settlement, nearly 6 kilometres across (1,733 hectares/17 km²), had four fortification lines and an inner settlement with a diameter of approximately 2 kilometres (Szentmiklosi et al. 2011). Magnetic mapping and preliminary excavations suggest a dense and well-organized settlement of urban character. An estimated 824,000 tonnes of earth had to be moved for the fortification walls alone. Archaeological material and a few C14 dates suggest the construction took place during the early Urnfield Culture in the middle of the fourteenth century (Bronze D), and the settlement was apparently abandoned and burned down some time later, during HaA1 in the thirteenth century BC. There is still a long way to go before we fully understand this mega-site; archaeological work is so far preliminary, but it suggests that something completely new was taking place in terms of the organization of large populations. There is also evidence of two smaller fortified sites, 1 kilometre across, which might also have been part of this new political structure. We must envisage these mega-sites as being part of a political centralization process, a complex chiefdom or archaic state that perhaps failed; however, we find corresponding rich graves from the same period, and it was contemporary with the Bernstorf fortification and its subsequent devastation. Furthermore, such population surplus would be a natural prime mover for later migrations, especially if the settlement was abandoned in part or totally.

Such migrations correspond with evidence from Tollense in fertile Mecklenburg (Price 2014). It was here that a huge army of several hundred or perhaps even several thousand warriors met a defending army. This led to a battle that raged along the small river over several kilometres. The attackers apparently came from the south and used bronze arrowheads and also horses. Dating of the battle through C14 so far places it in the middle of the thirteenth century BC. Such a migration to the Nordic cultural zone could have been the kind of event that broke off the old exchange network to south Germany and established a new connection to the south – Slovakia and the Carpathians. It suggests that Bronze Age societies were highly organized, but also that overpopulation and new forms of political authority might have led to emigration, first to the north, later to the south. It further provides part of an explanation for a temporary collapse of the metal trade in the thirteenth century BC, as shown by the dominance of heavily worn swords.

New Forms of Agrarian Intensification Created Larger Food Supplies

New crops and more intensive agrarian regimes were introduced during the Urnfield period, and this transformed landscapes on a large scale (Bartelheim and Stäuble 2009), just as river valleys became prone to erosion (French 2010). Some of these new agrarian strategies could well have been inspired by the south, but, more importantly, they allowed more people to be fed than by the predominantly herding economies of the Tumulus culture.

We may therefore conclude that during the thirteenth century BC societies in Central Europe underwent not only a religious reform with the onset of the Urnfield culture, but also economic and political reforms – in short, a new political economy with a higher degree of centralization was established, and, consequently, many later settlements were now fortified (Harding 2002: 296). The more extreme centralization processes may have succeeded only in the heartland of Central Europe, but they spurred new migrations to the north, the west, and later to the south. A similar development of a more hierarchical settlement structure followed by more violence is also shown through the Terramare Culture in northern Italy (Cansi et al. 2009), where a large population concentration reached its tipping point around 1200 BC and more than 100,000 people abandoned their homes. Some of them settled elsewhere in Italy, while others evidently became part of the Sea Peoples (Cardarelli 2009; Kristiansen 2016). Such a build-up of populations in northern Italy and Central Europe provides a necessary background for understanding how Bronze Age societies in Europe could provide the population surplus for the huge migrations on land and sea that came to characterize the twelfth century BC and which led to the onset of the Dark Age in Anatolia and the east Mediterranean.

The change of the dominant trade routes from west to east Central Europe during the decades around 1300 BC was therefore part of regional competition between different political economies in which the new Urnfield Culture represented a return to a more centralized political economy organized around large fortified settlements in opposition to the individual farms and hamlets that characterized the Tumulus Culture and early Urnfield Culture in the west (Kristiansen 2013; Sperber 1999). Their network was based upon chiefdom confederacies, although they would have a few fortified settlements in the central hubs of the trade network, such as Bernstorff (Bähr et al. 2012). The Urnfield trade network, however, was based on control of larger parts of the network from a few large fortified settlements. Due to higher population densities, they were also able to settle areas along the network through migrations supported by armies. It seems that the new eastern network maintained some political alliances with the west, as exemplified by the Riegsee and Dreiwulstschwerter sword types, but the west was not allowed full access to the metal trade, as shown by the increasing circulation time of these sword types (Figs. 3.3 and 3.4).

CONCLUSION

Warfare became institutionalized and professionalized in the Middle Bronze Age, and travelling warriors/mercenaries helped to speed innovations in weapon technology. The flange-hilted sword was the preferred weapon and was a concrete example of this internationalism in weapon technology and warfare. Warriors were organized in local retinues of fifteen to twenty men under the local sword-bearing leader. Many such war-bands could join forces and make up real armies under special circumstances. Organized trade made warriors indispensable, and warfare could take on huge proportions when it came to the control of trade routes, or rather their most important hubs/bottlenecks, such as Bernstorff. In addition, knowledge about far-away places and riches made migrations an attractive option in periods of crisis and population surplus. We may assume that a constant supply of warriors was available from sons without inheritance forming youth war-bands and later joining regular retinues. Especially from the thirteenth century BC onwards, there emerged a new situation in east Central Europe with the advent of the Urnfield Culture. It led to violent transformations and migrations, and new large mega-sites were constructed. To feed such huge populations, an intensification of farming took place, one with heavier emphasis placed on crops that display more variety. Warriors were now mobilized in real armies, supporting migration; it is just such a battle of migrating people and warriors that we witness in Tollense, Mecklenburg (Price 2014). Later, they would turn to the south, Asia Minor and the east Mediterranean. However, it seems that this

Urnfield mobilization would not last, and conditions returned to 'normal' after the twelfth century BC, although fortified settlements were now the norm.

In all this – trade alternating with raids and sometimes leading to large-scale migrations – Bronze Age warfare looks more like Celtic and Viking warfare and migration. It implies that, by the Bronze Age, European political economies had reached a level of organization that changed little until historical times. Some would term this a military democracy and others would term it a chiefdom-level of social organization. My point is that, by the Bronze Age, we can already observe significant variations between east and west Central Europe, linked to decentralized versus centralized political economies. Our objective must therefore be to uncover the historical forces leading to the dominance of one or the other form because they are historically interlinked. For both forms, we could observe a repetitive, cyclical pattern of trade alternating with raids and periodical population surplus leading to migrations and warfare but soon returning to normal. What makes the Bronze Age special, however, was the constant demand for metal through trade, which meant that long-distance political economies – so-called confederacies – prevailed during this period. Sometimes, however, adventurous chiefs who controlled important bottlenecks in the trade system would attempt to turn such confederacies into complex chiefdoms or archaic states of a more centralized nature, as we saw during the earlier Urnfield period – although this quickly collapsed. This evolutionary dynamic lends the Bronze Age a specific historical flavour.

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CHAPTER FOUR

WARFARE VS. EXCHANGE? THOUGHTS ON AN INTEGRATIVE APPROACH

Christian Horn

INTRODUCTION

In prehistoric research, the concept of exchange is generally seen as responsible for much of the distribution patterns we observe, bringing goods in the form of raw materials or finished objects to a region. Such exchange may also be considered to have been imbued with the power to introduce technological and social change. If warfare is at all mentioned in this process, it is often only in passing (Olausson 1988) and is frequently considered to be an opposition to exchange. Slightly exaggerating, it can be stated that prehistoric societies are portrayed either as peaceful or as engaged in warfare (Vandkilde forthcoming). Conflict is uniformly considered to be disruptive and separating (i.e., nothing constructive comes out of it, whereas exchange can take on a multitude of forms) (Polanyi, Arensberg and Pearson 1957; Polanyi et al. 1975; Renfrew 1975). Perhaps this is the reason why the concept of exchange is used by authors from many different theoretical standpoints to interpret their data in favour of either diffusion or migration (e.g., De Navarro 1950; Earle 2010). To a certain extent these interpretations are based on circumstantial evidence such as the distribution of natural resources (Shennan 1982; Needham 2006) or the observation of elements deemed to be 'foreign' (e.g., Vandkilde 1996: 225). They are often deduced by analogies taken from social anthropology, for instance from the concepts of gift exchange and the acquisition of commodities (cf. Fontijn 2002: 31).

Nevertheless, the presence of weapons, warrior graves, and imagery does not fit smoothly into this picture. Thus, the questions concerning their meaning in prehistory persist. The following is an attempt to reach an integrated understanding of exchange and warfare. Due to the circumstantial nature of the evidence and space restrictions, the discussion will be brief and some evidence must be left out.

ENVIRONMENT AND ECONOMY: FAVOURABLE REGIONS

Similar systems of exchange may have existed in the Late Neolithic and the Earliest Bronze Age in southern Scandinavia. Natural resources for exchange were available in the deposits of flint (Varberg 2005) and Baltic amber (Shennan 1982). Copper, on the other hand, was presumably imported (Ling et al. 2013) as suggested by the morphology of metal artefacts which are thought to confirm these far-reaching contacts (cf. Oldeberg 1976). However compelling, this proposed system is accompanied by some inherent problems, at least when it is supposed to account for all of southern Scandinavia. For example, the distribution of natural resources is unequal and seems to be concentrated in Limfjord, the Danish Isles and Rügen (Fig. 4.1). Another unsolved question is what resource flowed in the opposite exchange direction (Klassen 2000: 277–278). The picture created unintentionally conveys the idea of a communal sphere in which people came together peacefully, bound by common trade, interest and contact: an ideal capitalist world.

One of the most favourable southern Scandinavian regions in terms of economic advantages is Limfjord and its adjacent regions (Fig. 4.1). It has a large occurrence of Baltic amber (Dahlström and Brost 1996), a resource that was highly significant during the Late Neolithic and the Bronze Age. Amber was exchanged throughout Europe, including the Wessex culture, Únětice culture, and later throughout the Mediterranean region (Harding, Hughes-Brock and Beck 1974; Shennan 1982). Large deposits of naturally occurring flint were another resource used by the inhabitants of Limfjord (Varberg 2005). Flint daggers were widely distributed throughout Scandinavia and more distant regions, reaching Finland, Poland and the Netherlands (Lomborg 1973; Apel 2001). Therefore, both materials were very important for the production and acquisition of prestige goods thought to be highly significant for the establishment of social rule and hierarchies (Earle 2004).

Additionally, natural currents favour Limfjord (Ehlin 1981: 129–133). From the west, significant streams pass Limfjord and flow into the Kattegat and the Skategatt (Fig. 4.1). Potentially, this facilitated incoming exchange by means of waterborne mobility, perhaps from northwestern Germany and the Netherlands or even European regions farther away, such as the British Isles, France or Iberia. Along the coast, currents flow out of the Skategatt and

4.1: Map of southern Scandinavia indicating natural resources, maritime currents and metal trade routes (after Dahlström and Brost 1996; Varberg 2005).

Kattegat past Limfjord, possibly enabling water-bound contacts to regions in southern Norway and farther north. Consequently, Limfjord was not just well situated in terms of naturally occurring raw materials for high-profile objects, but it was also in a good position to participate in local, transregional and long-distance exchange networks. This situational framework evokes two central questions (Varberg 2005: figs. 1, 2): what did other regions have to offer in order to participate in exchange networks deemed important in prehistory and, as asked earlier, what flowed in the opposite direction? One raw material that had to be imported from different sources into southern Scandinavia was copper (Ling et al. 2012). Regions in closer proximity to Limfjord which matched its richness may also have been participating in copper exchange networks (e.g., Scania and parts of northern Poland, which also have occurrences of Baltic amber, or the Island of Rügen, with its large quantities of flint and amber). Nevertheless, the combined presence of both resources in Limfjord along with its geographical position may have

(a)

Graves with amber (n = 107)

(b)

Graves (n = 2153)
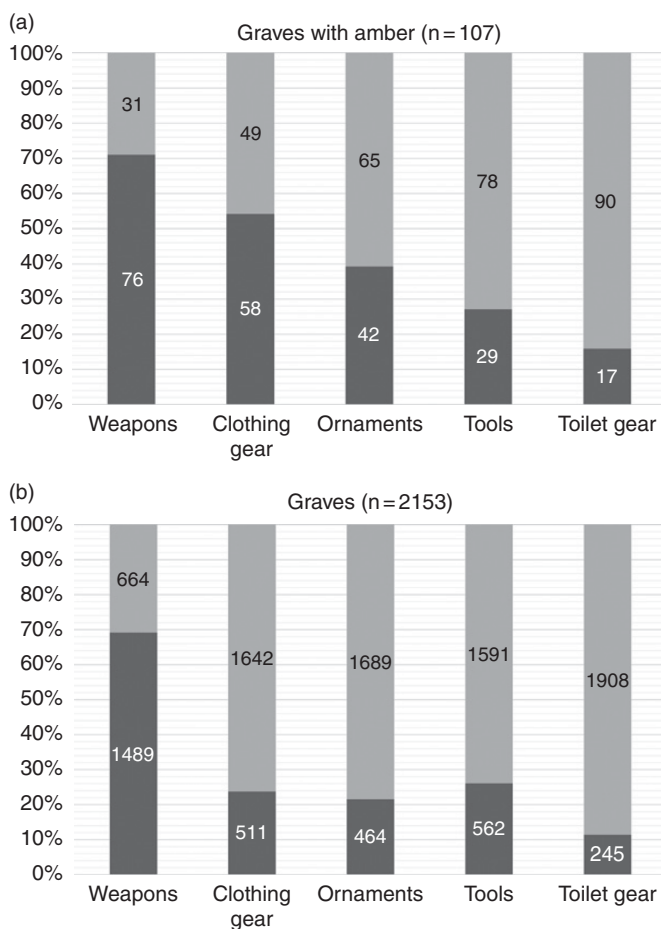
4.2: Grave goods: A. in graves with amber; B. all graves.

given it a competitive advantage. Regions to the north might have been providing other materials such as timber and furs (Klassen 2000: 277), but it is still difficult to verify these assumptions (Varberg 2005). Thus, they may have been left out of direct participation in the described exchange networks.

Theoretically, there are several possible disruptions in the flow of resources and prestige goods. Several concurrent groups engaged in exchange with similar raw materials, and competing for participation in the exchange of raw copper and prestige items could have led to an overpresence of providers. Conversely, amber and flint being such important resources could have driven the exchange rate up if some groups were able to deliver more than others. In both cases, some communities would have been left out of the exchange networks but would still have needed these prestige goods due to their significance for their internal socio-political economies. Some communities, especially those farther north, may have been left out entirely due to their lack of resources needed to enable participation.

In accordance with these theoretical considerations, we can assume that the potential for conflict was a given. This may have been a contributor to the variable and fluid southern Scandinavian world during the Late Neolithic and the earliest Bronze Age (Bergerbrant 2013: 153) that cannot be explained easily with a constant, ever-flowing exchange network alone. But if conflict did exist, how can we prove it?

THE USE AND USABILITY OF EARLY SPECIALIZED WEAPONS

Among the first bronze objects created in Period I of the Early Nordic Bronze Age were weapons: short-swords and spears. Yet, even prior to this period, weapons in the form of copper halberds were present in southern Scandinavia. This is, in itself, a very intriguing observation, but these early weapons are viewed by many researchers with much scepticism. Frequently, halberds are portrayed as a nonfunctional class of weapons used solely for prestige or ritual purposes, and arguments testifying to their 'weak construction', 'unsuitability' and 'uselessness' have been repeated for more than seventy years (Ó'Ríordáin 1937: 241; cf. O'Flaherty 1998). Swords of the Sögel/Wohlde-complex have also equally been portrayed as technologically ill-constructed and merely fit for stabbing (Fontijn 2005: 146). Similarly, early spears have been considered by some to be 'clumsy' (Harding 2007: 76) or generally not fit for fighting (Mercer 2006: 131). In the light of this previous research, I will reconsider the evidence for fighting and war in the following.

If these weapons were not fit for use, a use-wear analysis should be expected to provide no traces of past combat. Here, I will only provide a summary of the use-wear analysis (for details, see Horn 2013, 2014a, 2014b). Fifteen of the forty-one known Late Neolithic halberds, and 208 of the approximately 600 known Period I weapons have been examined. Traces of use included impact damage (e.g., notches, indentations, blow-marks and plastic deformation including curvatures and fractures). Although plastic deformations are partially caused by impact, they are separated within this designation from impact damage because they affect larger parts of the weapon. Conversely, 'impact damage' leaves more or less clear imprints of the impacting objects. In that sense, tip damage forms a separate category including pressure, fracture and curvature. Traces of repair were recorded for two reasons: first, repairs were obviously only necessary when something had been damaged; therefore, they may account for secondary proof of combat use (Kristiansen 1984, 2002). Second, repairs distort combat traces because they subtract larger parts of the edges.

Post-depositional processes, above all corrosion, also distort use-wear traces. In general, certain aspects of depositions increase the potential of corrosion: for example, the environment of graves is more corrosive due to the presence of chlorine and ammonia as products of the decomposition of the human body

(Spähn 2001: 203 tab. 1; Tylecote 1979: 350). Preweakened parts, such as notches, are also susceptible due to their enlarged surface. For example, 56 per cent of the swords (twenty-eight) exhibited traces of use or repair, and only two swords (4 per cent) clearly lacked such evidence. The remaining swords (twenty or 40 per cent) were too disturbed to make any clear judgement. In comparison, spears exhibit use-wear more frequently. Perhaps this relates to the fact that more swords were discovered in burial contexts. Accordingly, almost half of the examined swords (twenty-three or 46 per cent) display strong corrosion. Despite these difficulties, the evidence for the use of the examined weapons in combat is overwhelming (Horn 2013, 2014a, 2014b). Kristiansen has shown that weapons continued to be used in frequently occurring conflicts in later periods (Kristiansen 1984, 2002).

More than half of the examined weaponry possessed damage acquired in combat as well as traces of repair indicating frequent and heavy use. If we consider the presence of different damage categories, repairs and the simultaneous presence of both combined with the occurrence of heavy disturbances, we can conclude that the damage observed represents only the minimum of the damage that was originally incurred (see Horn 2013, Horn 2014b).

Considering the evidence from the use-wear analysis it can be said that fighting occurred quite often. If the assumption is accepted that the weapons in the archaeological record present only a subset of the prehistoric reality, we may view Scandinavia as a tightly knit network in which conflict occurred with a certain degree of regularity. That this conflict could have ensued between close neighbours is exemplified by a deceased man discovered in Over Vindinge who had the tip of a local Valsømagle spear embedded in his pelvis (Kjær 1912). He also reminds us that these conflicts had serious consequences for the living population.

EXCHANGE AND WEAPONRY

It can perhaps generally be stated that archaeological evidence is for the most part sketchy, always demanding interpretation if past reality is to be approximated. Nonetheless, there is good evidence for the association of warfare and exchange if we turn our attention to the weapons themselves. The use-wear analysis suggests that many weapons were produced for violent conflict. However, used weapons may also have been part of the exchange of highly regarded gifts as objects invested with stories. That is to say, their use in warfare gave them their value and the potential to convey prestige. Therefore, it cannot be assumed that they were deposited as symbols for exchange as freshly produced objects might. Nevertheless, used weapons can serve as secondary proof of commodity exchange, namely as evidence of the exchange of the raw materials they were made from (Ling et al. 2013).

Accordingly, studies of lead isotopes suggest that most of the copper was imported into Scandinavia from all over Europe (Ling et al. 2013). This is confirmed by the observation that many weapon forms are influenced by contact with other regions. Halberds feature types known from the British Isles and later from the Únětice culture (Horn 2014a), whereas the development of swords seems to be largely dependent on interaction with the Carpathian Basin (Lomborg 1960). That past people made the decision to set aside some of the precious raw materials in anticipation of conflict (i.e., producing weapons to be used in combat), perhaps points to a certain necessity to do so. This necessity may have arisen within the competitive context of exchange. On a local scale, the same might be true for flint and flint daggers, which should be regarded as weapons rather than as tools within their social context (Christensen 2004: 141; Sarauw 2007: 73–75).

In a wider view, there is further evidence that warfare and exchange were interrelated. Other raw materials refer to this connection, pointing to exchange networks with regions outside Scandinavia. In the Wessex culture of southern Britain, pendants were produced in the shape of halberds. Their handles were made out of gold, Baltic amber or both (Piggott 1938: 84–85). These finds point to the manifold complexity involved in exchange and warfare. To produce the handles with imported raw materials from another region was not the only choice made: people decided to produce pendants in the form of a weapon not in use locally, but typically belonging to the wider Únětice region. Within the Únětice culture, hoard II from Dieskau not only exemplifies the link between warfare and exchange, but indicates connections to Scandinavia as well. A necklace of amber beads was associated with fourteen halberds, which implies that the Dieskau hoard II contained elements of both exchange and warfare because European halberds were usable and used as weapons (Horn 2014a).

Furthermore, there is local evidence in southern Scandinavia for a connection between amber and weapons. In Tinnum (Sylt), a grave assemblage was discovered containing an amber bead associated with a sword of the Sögel type (Aner and Kersten 1979: no. 2742) and a grave in Kisum in the Limfjord area contained a Wholde-type sword which was associated with another amber bead (Aner and Kersten 1995: no. 4642). These findings can be quantified: a sample of 107 graves with amber and associated finds dating to the Late Neolithic and Early Bronze Age mainly from northern Germany, Sweden and the Copenhagen region (taken from the respective Aner and Kersten volumes and Oldeberg 1974) were analysed and five categories were defined (Fig. 4.2). Ornaments and clothing gear have been separated according to their degree of practical utility. Assuming that the dead were usually buried clothed, a fibula or a pin was necessary to secure the garment and therefore was possibly not a prestigious gift, but a finger ring would have been something extraordinary in

this sense. It should also be mentioned that the weapons category also includes axes. Scandinavian rock art may be considered evidence that axes were employed in violent encounters because they appear in a number of antagonistic scenes; however, they were also counted in the tool category to reflect their other potential uses.

A majority of the graves with amber contain swords (seventy-six or 71 per cent). While this only slightly deviates from the overall percentage, there is a drop-off from the other categories. This can possibly be explained overall by the graves that include amber being somewhat richer than the rest. Analysing the categories further, we see that the average of present categories is 2.1 and the median is 2. For all the other graves, the average is 1.5 and the median is 1. Most remarkable in the scope of this paper is the relative increase in ornaments, clothing and toilet gear at the expense of tools in these graves (Fig. 4.2). This may potentially be seen as evidence that the local precious exchange material was closely connected to activities associated with conflict. Depending on the outlook of what the grave goods represent, this suggests that exchange with amber was a high-status activity either of the deceased himself or those who succeeded him. Assumedly, the continuous flow of the raw materials that formed the base and potential for exchange, as well as the raw materials used to produce these grave goods, needed to be a secured. The weapons could be interpreted as an integral part of exchange acts, whether to protect exchange networks or to force a one-sided 'exchange' through raiding. Rock carvings possibly depict this entanglement of high statuses, exchange networks, organization of raiding parties, waterborne mobility and participation in cosmological and political codes (see Chapter 5).

WATERBORNE MOBILITY AS A MEANS OF WARFARE AND EXCHANGE IN SOUTHERN SCANDINAVIA: AN OPEN MODEL

Here, I will argue that waterborne mobility, in addition to being a means of exchange, was a major means of warfare in southern Scandinavia. That does not imply that fighting took place on or from canoes: it just refers to a mode of transportation equally employed in both activities.

People were present on the various islands of southern Scandinavia since at least the Neolithic. Isotopic studies carried out on populations of Öland verify that some of them migrated during their life times, with an increased migration tendency during the transition from the Late Neolithic to the Early Bronze Age Period I (Linderholm et al. 2011). Boats were most likely the means used to reach new destinations, which is confirmed by rock art stemming at the latest from the Early Nordic Bronze Age (Period I), although some might be Late Neolithic. Previously thought to be merely a symbol for terrestrial communities, Ling (2008: 15–35) has convincingly shown that boats, or rather canoes,

were an important means of transportation, shaping social and ritual life through practice.

The construction of boats was presumably very consistent over time. A sewn-plank canoe dating to the Iron Age was discovered in Hjortspring (Randsborg 1995) along with a large number of weapons. Although no such canoe has been found for the Late Neolithic and the Early Bronze Age, boats depicted in rock art possess a very similar outline; they could also have been constructed as skin boats (Crumlin-Pedersen 2003: 228–230). Log canoes with potential sewn plank extensions have, however, been discovered in Denmark (Crumlin-Pedersen 2003: 218–219). These canoes were lightly built vessels (Crumlin-Pedersen 2003: 232), perhaps capable of fast movement. If we follow Virilio's (1986) argument, such speedy waterborne mobility itself may have stimulated violent encounters. The interpretation of these canoes as war canoes has also been supported by ethnographic evidence (Ling 2008: 206, fig. 10.10). A quintessential multifunctionality (i.e., to be deployed for exchange and warfare) rests within these vessels.

Kaul (2003: 203) maintains that 'true' maritime warfare first started in the Early Iron Age. Yet Hjortspring is not, as he states, the oldest large-scale weapon sacrifice in the Nordic sphere (Kaul 2003: 203). Even though the amount of recovered weapons is considerably smaller, the hoard from Torsted, dating to Period I, contained forty spears (Becker 1964). Compared to what is known from contemporary finds, this is a massive amount. Moreover, there are further indications for a connection between waterborne mobility and warfare: depictions of halberds were occasionally transformed into ships (Burenhult 1980: 95–99). Considering Ling's interpretation (2008: fig. 7.35) that the tradition of carving canoes may already have started in the Late Neolithic, a possible connection between weapons and canoes can be suggested. Furthermore, early panels with rock carvings show canoes as well as weapons; for example in Enkenberg, Scania (RAÄ Östra Eneby 23:1). It may be that both weapons and canoes were employed in interrelated real-life situations. Kaul also suggests that there might be a relationship between weapon sacrifices and war-like interactions (2003: 203–206). During the Late Neolithic and the Early Bronze Age, settlement finds of weapons are virtually absent in the archaeological material. Conversely, ritual contexts are abundant if graves, hoards and single depositions are interpreted as such despite their different purposes.

There are not many Period I swords in Sweden, but a cluster was discovered in the wider surroundings of Mälardalen; the main distribution of these types is dispersed within Jutland and possibly Lolland (Bergerbrant 2013). People carrying weapons may have travelled between these places, regardless of whether the sacrificed weapons belonged to them or were local products after the transmission of the technological design by said travellers. Other weapon technologies spread in a similar manner (e.g., the halberd made of

metal). Nonetheless, what do these weapon sacrifices tell us about a connection between warfare and exchange?

Limfjord and Mälardalen had higher sea levels in prehistory; the land uplift was stronger in Mälardalen (Andersen 1990; Ling 2008: 47–57; cf. Påsse 2001). Charting the higher sea levels and weapon sacrifices reveals that many depositions were put down in close connection to the seascape (Fig. 4.3A–B). The light vessels in use probably did not need any special construction to land, so it may therefore be suggested that the charted deposition places were potential natural landing zones. Sea voyages fostered exchange due to speedy transport and the avoidance of land occupied by other groups, which thereby reduced the necessity for negotiation. Conversely, the increased speed of waterborne mobility increased the chances of violence due to a lack of possibilities for the control of movement (Virilio 1986). That, in turn, enables fast surprise attacks. Journeys by sea could have served to achieve ends with violent means. Such incidents may not have even been predetermined when a journey started, but rather decided upon opportunistically. People may have signified such places with ritual performances involving the weaponry used.

In summary, a high-frequency use of weaponry in combat, sacrifices of such weapons within seascapes and the presence of weaponry in rock art suggests that warfare and ritual are interrelated. This is potentially linked to what Price (2002: 346–352) so aptly called 'the supernatural agency in battle'. A war leader could have been honoured with a burial including his weapon close to the locality chosen to embark on raiding journeys, or a successful raid could have triggered a sacrifice of a weapon used or looted by the raiders at the same locale. Hypothetically, sacrificed weaponry and items associated with them in hoards may represent loot rather than objects of trade-like exchange.

The natural environment may even hint towards a directionality for such violent exchange. Limfjord and the Danish Isles, with their abundance of precious raw materials and their privileged position in exchange networks, in addition to currents coming from Mälardalen, but also Scania, Bohuslän and Østfold, may have provided the incentive and the possibility for these communities to carry out speedy attacks (Fig. 4.1). Within this model, we may expect responses such as counterraids. Unfortunately, this has to remain a hypothesis for now because the archaeological remains are equivocal on these matters.

CONCLUSION

By examining the weapons and their internal and external associations to the sphere of exchange, this contribution argued that exchange and warfare should not be regarded as separate entities in Scandinavian prehistory. Both are meaningful actions suggesting mobility and contact between people. Some view the origin of exchange in warfare (Lévi-Strauss 1943), others may interpret it the

(a)
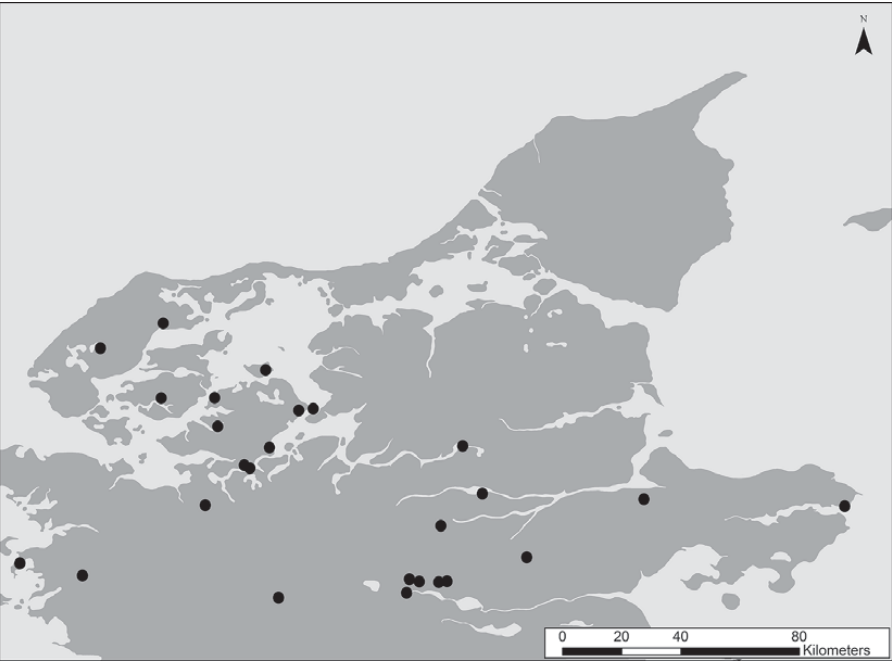
(b)
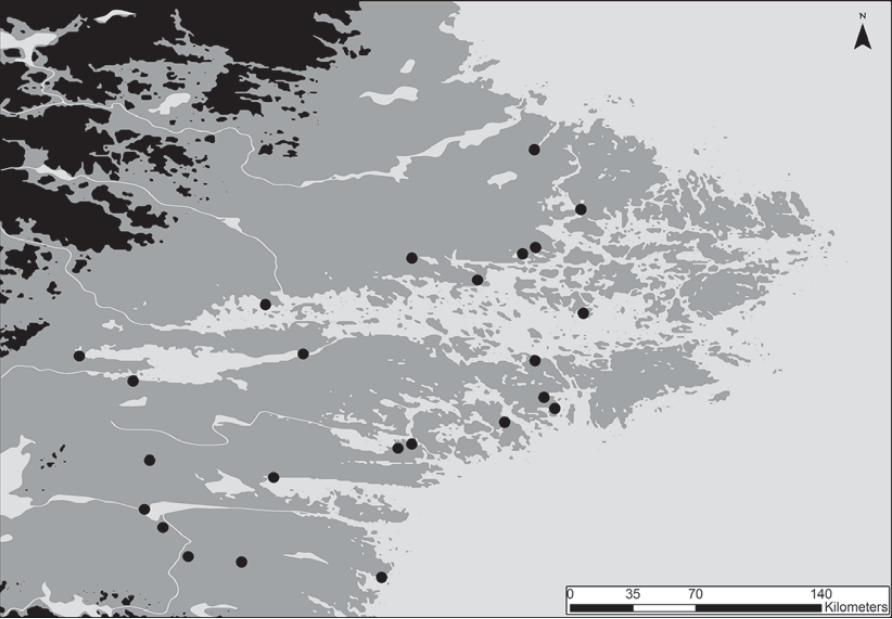
4.3: Early Bronze Age sea level: A. Limfjord (~5 m above current sea level); B. Mälardalen (~20–22 m above current sea level).

other way round. From the material presented here, it is not possible to make a firm decision on this issue. It appears that warfare and exchange are each other's *sine qua non*. Thus, if archaeologists are concerned with the distribution and displacement of material culture, it is suggested that considering both conflict and exchange is a worthwhile undertaking.

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MARITIME WARFARE IN SCANDINAVIAN ROCK ART

Johan Ling and Andreas Toreld

INTRODUCTION

What signifies a Bronze Age warrior? This question has been debated and argued by a wide range of researchers with different perspectives (Earle 1997; 2007; Kristiansen 1998; Harding 2007; Harrison 2004; Molloy 2007; Osgood 1998; Otto et al. 2006; Schauer 1979; Treherne 1995; Vandkilde 2006,). However, there seems to be a general consensus about some strands within this discourse regarding the character of the Bronze Age warrior. The following points conclude some of the actions, characteristics or strands that have been connected to the Bronze Age warrior (cf. Molloy 2007):

- Martial arts
- Traveller, trader
- Craftsman
- Hunter
- Artist
- Sportsman

It is interesting to stress that the listed characteristics are very pronounced in the Scandinavian Bronze Age rock art (Fig. 5.1). In fact, there is no media from the Bronze Age world that elaborates on these themes as much as the Bronze Age rock art. On the other hand, prehistoric warfare has often been downplayed in traditional postwar Scandinavian Bronze Age research in favour of society's

5.1: The famous panel from Fossum displays typical strands that could be connected to Bronze Age warriorhood. Photo by Milstreu, Tanums Hällristningsmuseum Underslös, Source SHFA.

functional and ritual aspects (Vandkilde 2006). This particularly applies to rock art research (Almgren 1927; Kaul 2004). It is, however, important to stress that Scandinavian rock art does at least display ideal and generic features of Bronze Age warfare that we should not deny or blind ourselves to (Bertilsson 1987; Harding 2007; Nordbladh 1989). In past years, we have seen tangible evidence in the skeletal material that war was often present during the Bronze Age in Northern Europe (Fyllingen 2006; Jantzen et al. 2011; Lindström 2009; Osgood and Monks 2000). In the light of the general violence during the Bronze Age, it is not surprising to find innovative configurations on the rocks illustrating different scenes of conflict and fighting ranging from ritualistic to more realistic dimensions.

The violence in the figurative rock art should perhaps not be described in terms of warriors per se because these are all too formal and institutional forms (Harding 2007: 115). There is little evidence to indicate full-time warriors (Molloy 2007). However, a special fraction of Bronze Age Scandinavian society probably dealt with maritime trade, warfare and travel (Kristiansen 1998, Kristiansen and Larsson 2005), and it is in this light that we should see and term the 'warriors' on the rocks. For instance, these 'warriors' are often accompanied by large ships, specific ritual gear and other exotica indicating that this practice was connected to 'international affairs' – or rather to an exclusiveness beyond regional mundane life (Fig. 5.1). In the following sections, we will focus our attention on two different figurative categories in rock

art that could be related to warfare: (1) some specific human representations attributed with weapons in action and (2) their relation to boats (or rather the war canoes) depicted on the rocks. Before we enter this case, however, there are some theoretical approaches that need to be emphasized.

ANNOUNCING SOCIAL POSITIONS BY MAKING IMAGES WITH THE INTENT TO CHANGE THE WORLD

The figurative rock art seems to represent a wide social spectrum of ideal items and actions. Some of the figurative depictions seem to articulate more social features whereas others show more ritualistic and staged features of society (for a more thorough comment on this, see Cornell and Ling 2010; Ling 2008: 178). Here, we will try to take the entire spectra into account, from the ritual and staged to the realistic, when discussing the act and significance of depicting war-related social phenomena on rocks (Fig. 5.2). Moreover, one important strand that we want to highlight is the active and intentional dimension of depicting antagonistic elements on rocks. For this purpose, we have turned to the theory of anthropologist Alfred Gell (1998).

Gell argued against conventional art historical perspectives that focused on symbolic meaning and aesthetic perceptions. In their place, Gell wished to place an emphasis on *agency, causation, result and transformation*. Art, to Gell, is a 'system of action intended to change the world'. He further argued that humans use artefacts and images as a kind extended agency, in his terms 'secondary agents', and realize their intentions through these.

According to Gell, the secondary agency must always be understood in relation to human praxis. Thus, the material, the image, has no life of its own and no ontology or independent agency (Gell 1998; Osborne and Tanner 2007).
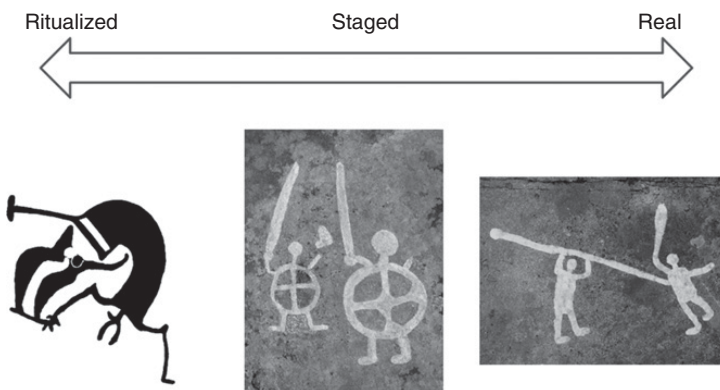
5.2: The social spectra of depicted warriors on the rocks, from ritualized to real. Photos by Andreas Toreld, Documentation by Stiftelsen för dokumentation av Bohusläns hällristningar.

Gell used the term 'magic' when referring to the intentions behind the artistic representation as an active praxis for manipulating social positions and social actions in the landscape. Thus, magic, in contrast to religious rituals, is *intended* to alter and transform the social world and bring about some desired practical result without the interference of supernatural beings (Gell 1998). Alternatively, as Petrovic (2003: 16) puts it: 'Magic denotes the belief in the individual's own powers, while religion shows a belief in beings with supernatural powers'.

In keeping with Gell and his emphasis on agency and transformation, the rock art could have served to emphasize the agency of the practices connected to Bronze Age warriorhood and, to some extent, make this ideology more dominant.

Moreover, there are some other important social traits that should be highlighted in terms of the persona of the warrior/trader/traveller. First of all, the person in question exhibits a 'liminal' occupation, or a state signified by a high degree of social exposure with an ambivalent social position in society and in the landscape. This therefore means that he or she must both obtain and achieve social position at the same time. Announcements are an important strategy in this context, and it is tempting to see the rock art as an instrument of this action (cf. Harding 2007).

Furthermore, being a warrior in a maritime environment must have demanded certain initiations and preparations in connection to sea journeys. Seasonal occupations at sea must have contrasted strongly with life and work on the land. Sea-going men would have confronted a totally different world, one full of dangerous natural forces such as harsh weather, waves, rocks and shoals (Ling 2008; Westerdahl 2005). However, it was also a world of great possibilities, utilities, hopes and desires. In this context, it is logical that extraordinary disciplines, skills, norms and taboos served a special need to cope with the hazardous conditions at sea (Westerdahl 2005). Several anthropologists, ethnologists and archaeologists have used concepts such as '*rite de passage*' and 'taboo' to describe this sociological behaviour at sea. Some general sociological phenomena may also be worth noting, such as special initiation rites and particular social and cognitive forms and norms of perceiving, acting, articulating and communicating through different corporal and lingual means (Ling 2008; Westerdahl 2005).

Thus, rituals connected with a sea journey or event may have been executed on the shore in three stages: (1) before a journey, in the form of preliminal rites, rites of separation; (2) during a journey, as liminal rites, rites of transitions; and (3) after a journey, as post-liminal rites, rites of incorporation (cf. Gennep 1960).

Malinowski distinguished two main driving forces behind the symbolic and magical behaviour connected with different stages and forms of maritime

actions (Malinowski 1922: 105; 1954). They are both of a rather rationalistic cognitive nature: namely, economic and personal risk. They also share the cognitive purpose of eliminating untoward acts at sea and stimulating individual and group action in connection with various forms and stages of maritime action. In fact, similar social preparations and initiations are often discussed in situations involving war (Harding 2007; Vandkilde 2006). Encountering enemies demands social preparation and initiations. Thus, being a maritime warrior in the Bronze Age demanded a kind of double 'magic' to be able to alter and transform the social world and bring about the desired practical result. The following points conclude some of the knowledge and skills that a maritime warrior may have been initiated into during the Bronze Age:

- Navigation and propulsion of the ship
- Martial arts
- Trading codes
- Craftsmanship
- Metals and goods
- Geopolitics
- Cosmopolitical expressions (cf. Fig. 5.1)

EVIDENCE OF COMBAT, FIGHTING AND WARFARE IN THE FIGURATIVE ROCK ART IN BOHUSLÄN

The coastal region of Western Sweden, Bohuslän, has a large concentration of prehistoric rock art dated from about 1700–300 BC; about 1,500 figurative sites have been recorded (Coles 2005). The majority of the rock art localities in Bohuslän were created close to the coast during the Bronze Age and feature panels dominated by ship images (Fig. 5.3). The general maritime location and content of the Bronze Age rock art are very important; in fact, the 10,000 depictions of ships outnumber all other figurative images, not least the so-called agrarian scenes, plough and wedding scenes. Rock art and burials both indicate that Bronze Age societies in Bohuslän were stratified, but not to what degree or form. However, the archaeological material indicates that small and fragile maritime chiefdoms probably existed here (Ling 2008). A key component in every form of chiefdom was to maintain the military apparatus (i.e., warriors; Earle 2002). Thus, the warriors depicted on the rocks in Bohuslän, Western Sweden, may then reflect on those agents that dealt with the praxis in this part of Scandinavia in the Bronze Age. However, the strategic communicative location of Bohuslän, from a maritime perspective, indicates that warriors from Eastern Denmark and Eastern Norway could also have interacted here (Fig. 5.4). In fact, warriors, traders and travellers have
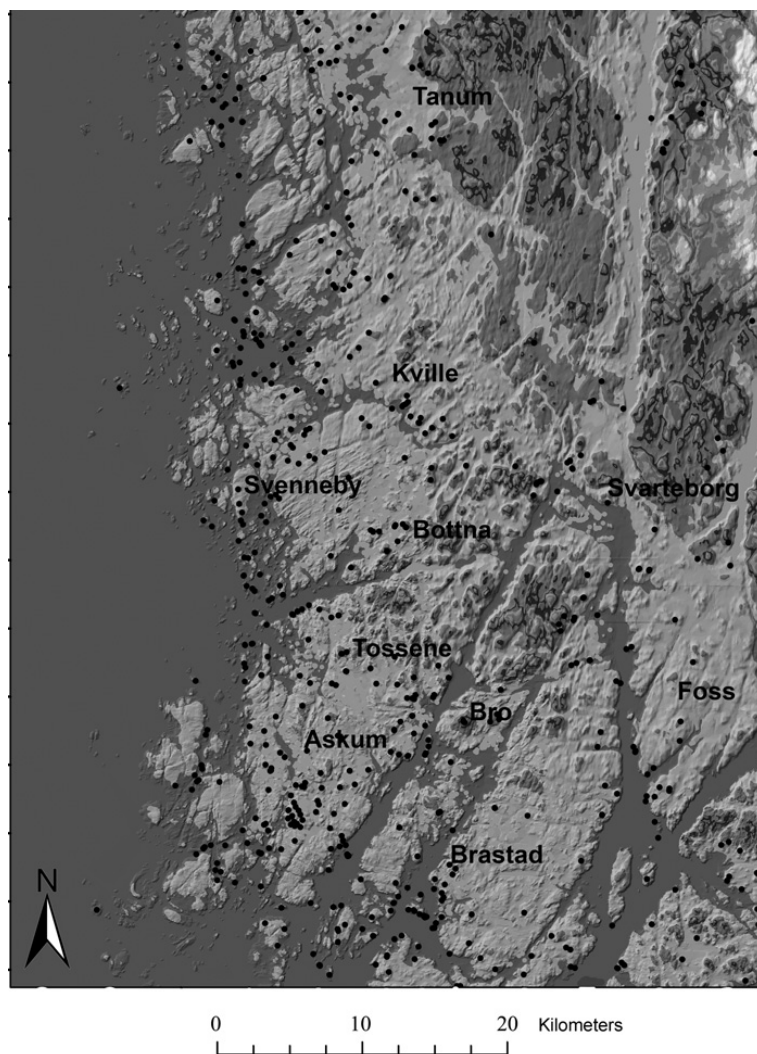
5.3: The study area in northern Bohuslän with rock art (*red dots*), cairns (*black dots*) and the Bronze Age shoreline at about 15 metres above current sea level. Image: J. Ling.

a special requirement to encounter each other in order to negotiate power, social positions, raids, trades and combat (Horn 2013).

In the light of Bohuslän's strategic maritime position, it is intriguing to note that new metal analyses indicate that an Atlantic network provided Scandinavia with copper and tin in the Bronze Age (Ling et al. 2014). Many of the coastal rock art regions could have worked as arenas for metal distribution in Southern Scandinavia and thereby functioned as 'aggregation sites' for groups with a mobile occupation, such as travellers, warriors and traders, as well as for groups with a more domestic occupation like that of inland areas (Fig. 5.4).

Maritime currents in Kategatt and Skagerrak
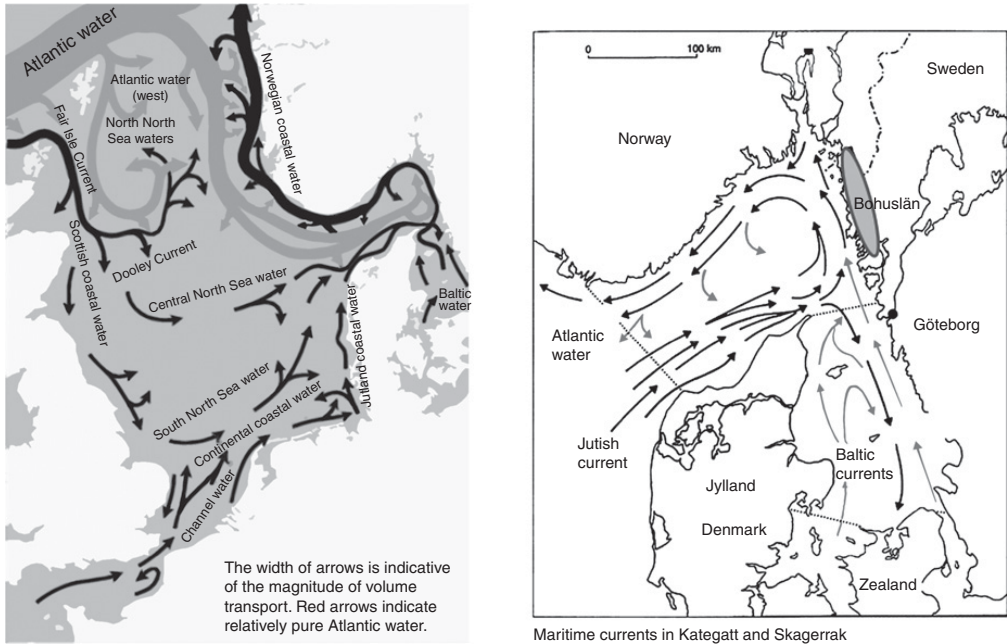
5.4: The strategic maritime location of the rock art in Western Sweden and Eastern Norway. The map to the left shows the sea currents which connect the British Isles with Scandinavia. The map to the right displays how these currents hit the west coast of Sweden where the rock art is located. Source www.cruiserswiki.org/wiki/North_Sea.

In addition to trade and communication, there is material evidence of antagonism and warfare in Bohuslän. Both the Early and Late Bronze Age bronze material is dominated by swords, spears and axes, and combat scenes are a recurrent theme on the rocks (Kindgren 1999: 73, 91; Nordbladh 1989: 324). In terms of warriors and warfare depicted on the rocks, these ideas were stressed by the first explanatory attempts made of the rock art (Ling 2008). For instance, a common interpretation by early antiquarians active during the eighteenth to nineteenth centuries was that the fighting scenes and warriors depicted on the rocks should be connected to the Vikings (Holmberg 1848; Tham 1794). However, during the majority of the twentieth century, the antagonistic elements instead became associated with seasonal fertility rites (Almgren 1927).

THE CASE OF SWORD-WIELDERS AND KILLING SCENES

Human figures are seen in action in various contexts within the rock art of Bohuslän. Many figures are 'warriors' who are carrying weapons and various forms of armour. In their hands, they hold axes, spears, bows and arrows as well as shields, although the most common weapon is the sword. According to Mats P. Malmer, 40 per cent of the human figures in Bohuslän carry swords (Malmer
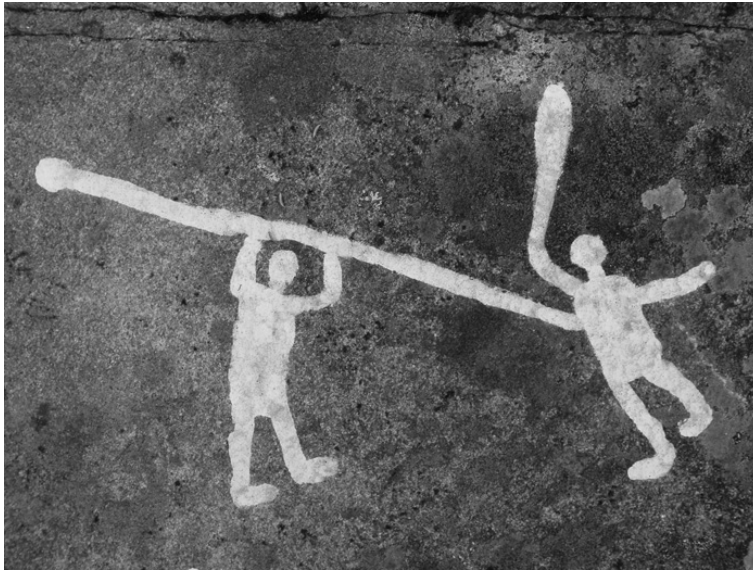
5.5: 'Killing' scene on the recently discovered rock carving site Brastad 617, panel B. Photo: Andreas Toreld.

1981: table 24; 1989: 22). However, the swords are never drawn, but always sheathed and hanging by their sides; this has been observed by several scholars (Coles 1990: 32; Harding 2007: 117; Ling 2008: 203; Malmer 1981: 78; 1989: 22). Attention has also been called to the fact that although the men point their axes and spears at each other, they are never seen to injure or kill each other (Bengtsson 1999: 22; Coles 1990: 34; Harding 2007: 116–117; Nordbladh 1989: 327). This lack of depictions of drawn swords and combat resulting in death is not only the case in the rock art of Bohuslän, but across the whole of Northern Europe.

During fieldwork in the parish of Brastad, a newly found rock carving site at Medbo changed both of these established facts (Toreld 2012). On the surface of a rock 16 by 5 metres in size, located in a private garden, is a scene with a human figure thrusting a spear with both hands into the chest of an antagonist (Fig. 5.5). The victim himself seems to attack with a raised weapon, which looks to be a simple bludgeon. The simple design of the figures and the lack of prestige weapons supports the conclusion that this is a depiction of an actual conflict resulting in death. Another human figure further down on the same rock was clearly holding a sword up in the air and can therefore be classified as a sword-wielder (Fig. 6.6). Furthermore, when the fieldwork was finished in this confined valley, no fewer than twenty-four sword-wielders were found distributed over nine rock carving sites in the neighbourhood of Medbo. At one of the newly found sites, we see a group of people standing facing each other; at least six of them are holding swords up in front of themselves

5.6: Sword-wielder at Brastad 617, panel C. Photo: Andreas Toreld.

(Fig. 5.7). If these figures are intended to be included in the same composition, it is logical to suggest that they are engaged in combat with each other. On another of the rocks where there are two sword-wielders, there are also two archers aiming at one another. The scene with the archers is not unique in itself, but it reinforces the impression that the rock art in this valley is unusually violent. Another example of a violent situation is a scene in which a human figure with a sheathed sword at his side is threatened by a figure holding a spear while a third figure seems to intervene and ward off the attack (Fig. 5.8).

We may particularly note that scenes in Medbo depict the use of high-status weapons such as swords, but also simpler weapons like spears and bludgeons as well as bows and arrows. It is most likely the case that all of the sword-wielders in Medbo, as well as the killing scene, were made some time during the course of Periods II–III of the Bronze Age (Toreld 2012). It is also a fact that most of the bronze swords found in Sweden are dated to Period II (Larsson 1986). Having been introduced in Period I, swords spread widely during Period II, when there was also considerable local production of these weapons. By studying damage to and resharpening of the cutting edges of bronze swords,

5.7: Are these people armed with swords and engaged in combat? The human figures are carved in the same style, which suggests that they are contemporary. The ships were probably added on two different occasions. Section of the recently discovered rock carving site Brastad 620, panel A. Photo: Andreas Toreld.
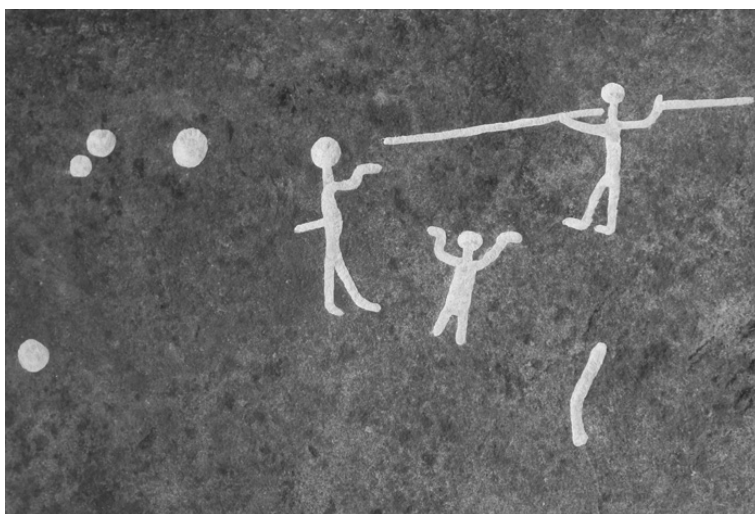
5.8: Threats of violence. The recently discovered site Brastad 620, panel B. The spear is some– what incomplete due to weathering of the rock. Photo: Andreas Toreld.

Kristian Kristiansen (1983; 1984; 2002) has shown that the swords were actually used in combat; they were not just for ceremonial use, as some scholars have claimed. The sword was the first weapon that was developed purely to be used against other humans. From this point onwards, the sword became the prime symbol of a warrior.

The killing scene at Medbo is evidence that the artists did not refrain from portraying real situations of deadly violence. This find enables us to put forward interpretations of other violent scenes as representations of real conflicts, of battles for life or death. These scenes are especially numerous in the neighbourhood of Medbo in the parish of Brastad, but depictions of conflicts are also quite common in the parishes of Tanum and Kville, which are richer in rock art (e.g., the sites Tanum 1, 12, 25, 29, 51, 72, 158, 192, 255, 319, 353, 365 and Kville 74, 124, 125, 157, 216). In these cases, the weapons pointed against opponents are spears and axes, along with bows and arrows. In Tanum and Kville, depictions of armed men are dated to the period from Bronze Age Period II until the Pre-Roman Iron Age (Ling 2012; cf. Vogt 2012: 71–84). In several cases, the weapons are held very close to, but not touching the body of the opponent. Not depicting the weapon piercing the body might be a way of showing the weapon in its entirety. On the other hand, there is at least one example in Tanum of a spear being stabbed into a body (Fig. 5.9). In this case, the spear-man was added after the axe-man, but one cannot tell if there is an hour or a century between them. Even if the scene was not created on one single occasion, it could hardly be a coincidence that the smaller warrior thrusts his spear into the back of the larger warrior. Killing the great warrior might be seen as one act of the 'magic' of trying to alter social positions in Bronze Age society.

THE CASE OF WAR CANOES

At present, there is no concrete evidence of a boat find from the Bronze Age in Scandinavia. However, most scholars agree on the great similarities between the Hjortspring boat, dated to 340 cal. BC, and the Bronze Age boats depicted on the rocks, a fact that bears witness to a long boat-building tradition in Northern Europe (Bradley 2009; Crumlin-Pedersen 2003; Kaul 1998; 2004; Kristiansen 2004; Ling 2012; Wehlin 2013).

Even so, it is important to emphasize that the depicted images are not a one-to-one depiction of a real social world. We are therefore aware of the methodological problems involved in connecting rock art ships to real boat finds. There are, however, some general structural and social features, such as the number and position of the ships' crews, which can be considered. These social settings may indeed reveal some interesting information about social norms connected with the boat in prehistoric times. The rock art ships are clearly governed by a strict dimensional code, as seen, for instance, in the proportions

5.9: Speared from behind. Section of rock carving site Tanum 319:1. Photo: Andreas Toreld.

of the hull measured between the stems (Ling 2008; 2012). The proportions of hull, stem and prows on the rock art ships closely correspond to the Hjortspring ship's proportions in these respects. This may indicate that the rock art ships could have been based on a similar plank–built tradition.

Most of the depicted warriors and combat scenes have been made close or adjacent to a contemporary ship depiction and in some ways appear to be attached to the ship. This repetitive maritime pattern is too evident to be ignored, although many scholars have detached the warriors from this context (Bertilsson 1987; Nordbladh 1989). Instead, the warriors should be discussed against this maritime background and perhaps broadly described as maritime warriors (Ling 2008; 2012).

The ship constitutes the axis, the infrastructure, of various social scenes within and outside it. Thus, most human scenes featuring warriors, adorants or acrobats seem to be attached to or connected, directly or indirectly, with the ship. There are instances of two enlarged warriors being depicted in the same ship as an anonymous set of crew, sometimes holding paddles (Ling 2012).

Furthermore, there are ship depictions featuring individuals placed fore and aft in what seem to be commanding positions, often with weapons or other items aimed, pointed or directed at an anonymous bunch of crew who pull oars in the midsection of the ship (Ling 2008). This again implies the need to emphasize scenes and codes of social inequality in the ship. Indeed, social norms could hardly be represented more explicitly than this. These scenes suggest that the ship could have functioned, at least metaphorically, as an important arena for the display and performance of social norms and inequalities (Ling 2012).

The strong similarity between ship depictions on the rocks favoured the hypothesis of a continuous boat-building tradition in Bohuslän from the Early Bronze Age to the Pre-Roman Iron Age. Moreover, the average Bronze Age ship is crewed by seven to eleven individuals, which may support the theory of a local mode or tradition of building boats of a certain size in the Tanum and Kville area during the Early to Late Bronze Age (Fig 5.10, Ling 2012).

The general difference between Early and Late Bronze Age compositions of rock art ships lies in the figurative representation of humans, which is much more concrete and pronounced during the Late Bronze Age. During the Early Bronze Age period, human representations seem to have been restricted primarily to crew strokes (Figs. 5.10 and 5.11). The first known representations of warriors are from Period II. These military representations become more accentuated in the following periods and reach a peak during Period V. Warriors are also represented during the Pre-Roman Iron Age, at least until 300 BC (e.g., Kaul 2004). However, the social representation of conflict

EBA

LBA

5.10: The most common way to crew a ship during the Bronze Age (BA). Early BA; average ship: 6–13, large ship 30–60. Late BA; average ship: 6–14, large ship 20–40. Some scholars even argue that this corresponds to the number of settlement units in the Bronze Age landscape and that these units could have been incorporated in a larger 'chiefdom' corresponding to an area of about 25 kilometres in diameter. Documentation by Torsten Högberg, Vitlycke museum and Gerhard Milstreu, Tanums Hällristningsmuseum Underslös. Source SHFA

The ship as a social arena
Social positions and social inequality displayed in the ships
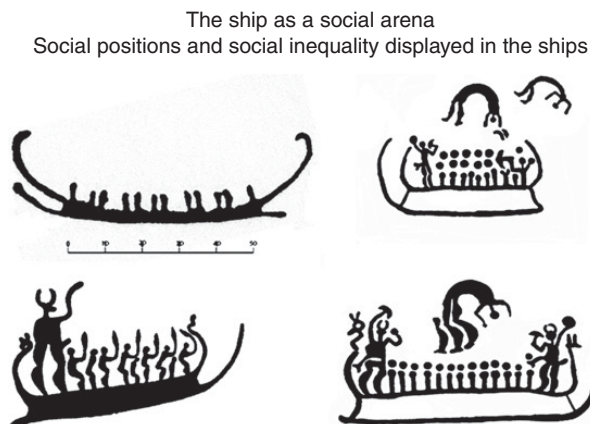
5.11: The ship as a social arena. Social positions and social inequality as displayed in ships.

seems to have been stressed far more often during the Late Bronze Age than during the Early Bronze Age and the Pre-Roman Iron Age (Vogt 2012).

These vessels may then have represented prevailing norms and ideals among the local social units when it came to building and crewing boats for maritime missions such as short- and middle-distance transport, trading, warfare and raiding. The large ship images with numerous crew, crew members in clearly defined positions in the ships and elevated or enlarged individuals with warrior attributes may instead be regarded as military or ceremonial vessels, such as war canoes, which were staged and used for special maritime events. Thus, comparisons between archaeological and ethnographic data indicate that the large Bronze Age ship images with many crew strokes could have been based on real ships (Ling 2008). This may modify the religiously oriented interpretations that see the rock art ships primarily as 'agrarian fetishes' or cult ships with no reference to any existing maritime reality.

DISCUSSION AND CONCLUSIONS: A WARRIOR'S TALE

Considering the panels in the maritime zone itself, it is tempting to make the assumption that some of the rock art in Western Sweden was produced in accordance with maritime martial 'initiation' rites (into esoteric societies or into knowledge and skills); that is, rites for maritime tasks such as sea ventures involving maritime skills combined with martial arts (Ling 2008), as we discussed previously in the section 'Announcing Social Positions'.

There are ship images depicting crew who are kneeling, sitting or performing actions or poses such as raising paddles or weapons or blowing lures, possibly presenting social 'initiations' that are staged in the rock (Fig. 5.3). These representations perhaps worked like 'secondary agents' to announce the social position of the maritime warrior in the landscape and seascape.

In keeping with this, it could be relevant to consider the application of rock art as a kind of traveller's tale, or rather a warrior's tale, where representations of real events became mixed with myths, magic and bragging.

The images on the rocks indicate that both individual social actions and collective actions at different levels and in different settings and aggregations, ranging from the household to the crew of a ship, were all of social relevance to the Bronze Age society of Bohuslän. However, not all are visible in the social world engraved on the rocks. Making a ship on a rock was not only a depiction of a ship, it was also a way of stressing the importance of that form and of making a sort of skewed and distorted image of a 'full' social reality. Here it is relevant to stress the absence of houses or house imagery in the rock art of Bohuslän. Rather than being a mere coincidence, this point possibly reflects a particular social logic. The large number of ship depictions at various points in the landscape may, in itself, have served to enhance the importance of the maritime sphere. In a sense, rock art could have had certain political aims and dimensions but was used in a similar fashion to the prow decoration on the Trobiand Islands, for psychological and competitive social purposes and situations (Gell 1998: 8). In the lower maritime locations in the landscape, the ship is of major importance. This would have been the spatial frame for collective maritime aggregations and interactions, represented by the 'collective' ship depictions.

Abnormally large humans in relation to the ships are presented on the higher ground, which indicates a space in which more individual actions and positions were of great importance (Fig. 5.1). The latter form of representation may even have illustrated in an active way that certain individuals had some kind of control over ships, at least in the process of building, crewing and launching them, but perhaps not in the same way at sea. Heavy maritime labour, such as the building of ships, long-distance travel and maritime fighting, must have been dependent on other levels of social organization, such as the household.

In a sense, the ship may have been a collective emancipator and a unifying feature but, at the same time, a demanding and alienating feature, and even uncanny. Thus, there may have been certain dynamics, expectations and conflicts between the individuals and groups positioned in or transferring between the terrestrial and maritime spheres. These dynamics may have included certain social conceptions and actions regarding gender, groups or individuals. The armed beings in antagonistic poses could then have been an element in social strategies.

Moreover, the strong presence of the ship in rock art denotes the loaded role it played in society. Rock art in Bohuslän manifests the maritime groups or individuals, their ideals, their actions and their position in society. Engraving the rocks was a medium that was partially (but only partially) open to control and alteration, used for strategic purposes, but at times directly and intentionally.

In keeping with Gell and his emphasis on agency, causation, result and transformation, the rock art could have served to announce and accentuate the agency of the maritime social world and the generic code of fighting, to some extent even making this ideology more dominant. This could explain why ship images were depicted so frequently in the landscape, even on higher ground away from the sea, as well as with other rock art images. The agents who enhanced and conducted this maritime praxis on ships moved from one physical and cognitive domain to another, from land to shore to sea.

These mobile liminal agents (Ling and Cornell 2010; Westerdahl 2005) also transported new materials and new ideological conceptions, and they may have been regarded with both fear and joy (cf. Treherne 1995). In fact, in many societies, seamen were among those who introduced new conceptions about fashion, artefacts and ideology (Weibust 1958).

The extent and character of warfare are difficult to ascertain exactly, not to mention its causes. Some antagonistic actions may have fulfilled a communicative and symbolic function, perhaps related to social and economic exchange and/or encounters. Small-scale raiding and armed clashes involving bloodshed and death were probably common (Thrane 2006: 501).

The next question concerns the kind of warfare, its intensity and frequency, and its instruments. Most of the warriors depicted in rock art scenes are in some way related to a contemporary ship depiction. This repetitive maritime pattern indicates a key condition and context that should not be ignored. Small-scale warfare or raiding could have been both a local phenomenon in Bohuslän and a practice in connection with overseas expeditions. The local conflicts might have been about competition between social or geographical units or constellations of various sizes, for different social and economic reasons. The same general setting could apply to overseas expeditions, although these may have been slightly more organized and extensive. In short, the causes may have been varied and complex. To illustrate one possible scenario, we know that during the Viking Age misfortune often turned overseas mercantile expeditions into small-scale warfare or raids (Hedeager 1994).

A closer look at the Bronze Age rock art images reveals that some ships display signs of being war machines. Some of the large ship images have a differentiated crew, with certain individuals in an elevated or enlarged position and attributed with weapons. These craft may be regarded as military or ceremonial boats, such as war canoes, which were staged and used for special maritime events. The similarity between the Danish war craft from Hjortspring and the ship depictions on the rocks favours this hypothesis (Crumlin-Pedersen 2003; Kaul 1998; 2003).

It is difficult to detail the practice and social organization of the maritime war canoe. There is little direct evidence in the available Bronze Age archaeological record from Scandinavia. The ship depictions can be used to count the number

of crew members, as discussed earlier. The average Bronze Age ship in the present case study has a crew of seven to eleven, which might represent a common local mode or tradition for the size and construction of ships with a more ordinary Bronze Age maritime practice and communication in the Tanum and Kville area (Figs. 5.10 and 5.11).

One theory is that the most common ships represent local social units or households. Lindström (2009) stresses this aspect regarding the ships from Sweden's second densest rock art area – the Uppland region. It is interesting that the rock art ships there appear to have been crewed in a similar way to those in Bohuslän, with a crew of six to twelve. In line with this, Lindström (2009) claims that the number of crew in the rock art ships roughly corresponds to the number of Bronze Age households that constituted the smallest settlement units in the landscape. Moreover, these smaller social units could have been incorporated in a larger 'chiefdom' corresponding to an area of about 25 kilometres in diameter (Artursson 2009; Kristiansen 1998; Lindström 2009). This may, then, have comprised about ten small units and a population of about 1,000–1,500. Social, political and ritual aggregations would have been important features for such chiefdoms, and it is tempting to assume that the rock art areas with a maritime location were used for this purpose (Lindström 2009).

There are, however, images representing larger 'war canoes' with crews ranging from twenty to sixty. Nevertheless, if these images correspond to actual craft, how were these larger craft crewed and organized (Fig. 5.10)? At present, this must remain a matter for speculation. In the general discussion of maritime warfare in the Bronze and Iron Ages, some researchers argue for a general principle in early Scandinavian troop formation consisting of eighteen commoners and two commanders (Randsborg 1995: 39, 50). This argument is largely based on evidence from the Hjortspring boat and textual evidence in Tacitus concerning the 'Svions'. Thus, the ship is conceived of as having been organized with a steersman and a stemsman in command of a crew of paddlers, equivalent to the commanders and commoners in the troop formation (Randsborg 1995). As discussed earlier, some of the rock art ships display a similar social setting, with two enlarged or armed 'leaders' fore and aft directing an anonymous crew; it is therefore tempting to see this as a long tradition in Northern Europe.

In this chapter, we have tried to address and discuss different aspects of the war-related phenomena depicted in the Bronze Age rock art from Western Sweden. On the basis of the figurative material, we have tried to discuss ritual, staged and more realistic depictions of war-related phenomena found in rock art. It must be emphasized that these features are very pronounced in the Scandinavian Bronze Age rock art. Announcing is an important strategy in warfare, and it is tempting to see the rock art as an instrument of this action.

Finally, the most important aim of this chapter was to highlight the active and intentional dimension of depicting antagonistic elements on the rocks in the Scandinavian Bronze Age.

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BRONZE WEAPONRY AND CULTURAL MOBILITY IN LATE BRONZE AGE SOUTHEAST EUROPE

Barry Molloy

T HE COLLAPSE OF THE BRONZE AGE PALATIAL CENTRES IN THE Aegean transformed the societies surrounding the palaces and unbalanced the relationship between these areas and those immediately to the north. In Classical tradition, the Dorians invaded Greece in the twilight years of the palaces or soon thereafter, leading to collapse. It is here suggested that, far from being a redundant view of mass migrations, the tales of the Dorians can be instructive for understanding elite manipulation of a sea of shifting identities and allegiances born of transcultural interaction. This involved peoples from particular areas along with those from within the lands of Greece and the Apennine and Balkan Peninsulas. This chapter uses the case of diversity within the forms of Naue II swords and, to a lesser extent, spearheads to explore the regional patterns of the Aegean at this time. It examines different phases of the *chaîne opératoire* to isolate the range of ways in which these bronze artefacts can reveal connectivity. It is proposed that three major regional divisions within Greece are relevant and that considerable disparity among them is evident. Interaction occurs across these multiple scales, influenced by individual choices, but the swords in this chapter are shown to have heterogeneous origins.

INTRODUCTION

Up until around fifty years ago, it was commonplace in archaeological narratives to find migration and invasion as explanations for culture change. More

specifically, finds of artefacts which were considered to have 'foreign' origin to any given area were regularly accounted for by movements of people with things, not things alone or ideas associated with the use of things. In recent years, an increasing interest in interaction studies has focused on the movement of artefacts and ideas, but also of people, throughout and across perceived cultural boundaries (Alberti and Sabatini 2013; Borgna and Càssola Guida 2009; Knappett 2011; Maran and Stockhammer 2012; Molloy, forthcoming; Parkinson and Galaty 2010; Tomas 2010). The interpretative framework of migrations and the mobility of peoples, by many resigned to a disciplinary fossil (Anthony 1997; Chapman and Hamerow 1997), has recently seen the re-emergence of critical advocates who take into account a wide range of sources, methods and theoretical developments (Kristiansen, forthcoming; Molloy 2015). This chapter will focus on aspects of one of the better known migration narratives taken from Greek prehistory – the tales of the invading Dorians or returning Heraclids (O'Brien 2013).

These are known from Classical histories (Herodotus 1.56.3; Thucydides 1.12) and legends, which recount tales of invading groups, en masse or elites only, in the twilight years of the Age of Heroes – the Late Bronze Age to us. More accurately, my investigation does not seek to identify these specific groups and tie them to material culture. Rather, I seek to characterize how military material culture may reflect the mobility of such persons of different cultural, and potentially ethnic, origins within Greece in the thirteenth and twelfth centuries BC (Feuer 2011; Molloy 2015). Following the core of the preceding myths, the people who will be studied are warriors; the archetypal boundary crossers of prehistory (Kristiansen and Larsson 2007) and, as such, quite a specific element within a population. Different variations on the common military traditions of this period are identified in this chapter and are shown to be regional in their character. As such, we can suggest points of transgression of boundaries, as well as mutually endorsed interactions, when looking at the recovery patterns of artefacts.

In order to trace the differences in weapon forms in Greece during the final three centuries of the second millennium BC, I suggest that a *chaîne opératoire* approach which identifies particular aspects of weapons could prove useful to identify diverse modes of interaction and the exchange of objects and ideas. The datasets include metal alloys, crafting traditions, functional properties and the taxonomic features of weaponry. These features are known to have had a broad regional significance across the Balkan (including Greece) and Apennine peninsulas (Bouzek 1985; Harding 1984; Molloy and Doonan, forthcoming; Stavropoulou Gatsi, Jung and Mehofer 2012), although in Greece they existed alongside long-established and often diverse local traditions. It has long been agreed that the tales of the Dorians have little substantive archaeological basis when looking for invasions from beyond the

Aegean or mass internal migration. It is suggested here, however, that the echoes of such myths reflect the social reorganization within the modern territory of Greece, in particular the rebalancing of power between the non-palatial and formerly palatial groups, both spatially and socially. Maran (2011) argued that the memory of the palatial period by early LH IIIC was not only more vague than previously thought, but that recent histories were actively manipulated to fulfil the needs of the then current elites. This involved the development of new political relationships that may have ranged from alliances to the outright deposal of elite groups. It is interesting to reconsider Herodotus's account of the Dorians in this light, fully cognisant that it was written centuries after the alleged invasion and could at best be expected to contain a vague echo.

> The Pelasgian race has never yet left its home; the Hellenic has wandered often and far. For in the days of king Deucalion it inhabited the land of Phthia, then the country called Histiaean, under Ossa and Olympus, in the time of Dorus son of Hellen; driven from this Histiaean country by the Cadmeans, it settled about Pindus in the territory called Macedonian; from there again it migrated to Dryopia, and at last came from Dryopia into the Peloponnese, where it took the name of Dorian. (Herodotus 1.56:2–3)

Rather than seeing this in terms of a unidirectional invasion or migration from without, it may be seen as an echo of a *zeitgeist* in which cultural boundaries were fluid and the process of actual or abortive ethnogenesis was under way, as is commonly argued for the Philistines (Yasur-Landau 2010). There is no doubt that narratives of legitimation sprang up and vanished with frequency if certain groups or elements of them (warriors) were reconfiguring territories with cycles of success and failure. Out of that sea of chaos, those groups that remained may have inherited a very chequered 'lineage' to which they laid claim. So the Dorian myth in this light of invaders from within and without mixing in actions from the very local to the regional is perhaps less fanciful than Maspero's famous 'all or nothing migration' take on the Dorians of more than a century ago (Maspero 1896/2010). The myth as told by Herodotus is indeed instructive and might even corroborate recent theoretical positions about the transculturality of Greece at this time.

The model presented on the basis of the small dataset of weaponry in this chapter is intended to reflect elements of the development of distinct regional traditions and explain how the objects recovered may have 'travelled'. It might therefore be seen as an exploration of how we can interpret regional patterning in material culture which complements the spirit of the presented myths rather than an attempt to provide a definitive framework to identify specific cultural or ethnic groups in order to substantiate those myths.

SPECULATING ABOUT THE DORIANS

Mythology can be used to cover all manner of crimes and rewrite local histories to justify the present usurpation of political authority – a picture that may well suit the agenda of the alleged return of supposedly exiled parties. The post-palatial world was a place where the old securities, whatever they may have been, had vanished and the stability of boundaries must equally have been increasingly in flux. Adoption of the tales of mass migrations at the dawn of the discipline of archaeology, particularly the large-scale 'Dorian conquests' stretching as far as Egypt (Maspero 1896/2010), may be seen to reflect con-temporary nineteenth-century political and social fears or agendas (O'Brien 2013). This exaggeration of the original myths led from an initial enthusiasm to outright rejection of invasion or migration hypotheses in Aegean archaeology. Nevertheless, we know with considerable certainty that in the later thirteenth and earlier twelfth centuries BC, the mobile groups (often called Sea Peoples) were active in the East Mediterranean, sacking towns and cities and even invading Egypt. Wachsmann (2000) demonstrated convincingly that some of the boats of the so-called Sea Peoples in the Medinet Habu reliefs in Egypt, on ceramics in the Aegean and on bronze-work in the Danubian provinces share significant similarities that appear to go beyond coincidence. In the Egyptian sources recounting the attacks of the Sea Peoples, we read of many tribal names (Sandars 1985) from far-flung areas beyond North Africa, the Levant and Anatolia. While we lack knowledge of their precise origins, if we are to believe the propaganda of Ramses III, they were people adept at using open-water or sea craft. We can reasonably speculate that people from the Aegean could have been involved in any such Sea Peoples activities, particularly given their long heritage at dominating the seas, which would have been passed through out of necessity. Proving this may be a different matter, but as a heuristic to consider the material evidence, it can serve a useful purpose. We can also note the service of some of the named Sea Peoples groups (e.g., the Shardana) in records of mercenary and state military activities in Egypt and West Asia Minor (respectively) suggesting that maritime travel for raiding and warfare, which are also presented in the Homeric epics, were not unknown to peoples of this time (Cline 2014; Kelder 2005; Schofield and Parkinson 1994). Any such 'Aegean' peoples, however, could have been highly diverse in their origin, given the marked regionalism in those lands during the Late Helladic period (Andreou, Fotiadis and Kotsakis 1996; Feuer 2011; Tartaron 2004). In these circumstances, any of the Sea Peoples[1] activities could have provided a very

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[1] I use the term hereafter as one of convenience and would define it very loosely as those groups capable of mounting non–state sponsored raids by sea, who may have been only on occasion confederated or allied. I have not bothered to repeatedly write this as 'Sea Peoples' for this reason, and I retain it as a proper noun on the basis that such groups were seen as a form of confederation, at times, by some of their contemporaries.

new forum for interaction amongst the Aegean peoples in ways that were previously not possible during the dominance of palatial elites, where political geographies were increasingly irrelevant. Without the palaces, there was little to differentiate the wealth acquisition methods of most groups in Greece, and, perhaps more to the point, there is little evidence to differentiate their potential military capacities. Thus, while the Sea Peoples are a convenient vehicle to account for a new forum of interaction between groups that previously had far less in common, it need not be the only context in which new forms of conflict and warfare drew together previously less-connected peoples.

With the demise of palaces and their ability to bring together and field armies (whatever the scale), it is easy to see how smaller warrior groups could have gained greater influence. Individuals, whether disenfranchised minor 'nobles' or ambitious mercenary or pirate leaders, also gained more latitude to use force in order to fulfil their objectives when central authorities collapsed; the myths of returning Heraclids or Dorians could thus fit well with the justificatory narratives one may imagine serving the needs of such people. The returning exiles may have displaced local elites by claiming legitimacy through convenient mythologies (Bouzek 1985), and there may also have been an emergent ethnic identity (based on a common dialect) as a cultural means to bind disparate groups. Plenty more combinations without mythological pedigrees could be added to these suggested historical or social processes of territorial consolidation (by cooperation or coercion). We may certainly expect that a cosmological or worldview transformation accompanied the hard evidence of settlement and landscape reorganization that surveys revealed (Dickinson 2006) and that the past as well as the present were being remodelled in this process.

IF WE ARE NOT LOOKING FOR A HOME FOR THE DORIANS, THEN WHAT ARE WE LOOKING FOR?

The range of material culture that defines the north and west interactions of the Mycenaeans has been looked at in detail by many scholars (Harding 2007), and it is clear that there is no macro-regional pattern beyond the existence of varied networks of exchange, not all of which were commercial. Feuer (2011) recently presented an extensive discussion about ethnic and cultural identity in the Late Mycenaean world and demonstrates that there were asymmetrical differences between the two. The interplay between these identities was responsible for regional variations on the Mycenaean theme; 'being Mycenaean' was by no means as straightforward an affair as it is to be a citizen of a modern nation state (Feuer 2011: 515). Some regional traditions in weapon manufacture and use will be presented in the next section, where it is suggested that they were meaningful on a cultural level – that is, the

recognition and maintenance of intentional local nuances in martial and craft traditions.

The patterning in the archaeological record, such as it is, may relate more to users of weapons than to the trade or exchange of them. This is because weapons were distinctly personal items that reflexively influenced the fighting style required – fighting styles which followed regional martial art traditions. A strictly one-to-one relationship cannot be posited because we do not know if our evidence reflects a person from area A spending time in area B and returning with weapons procured there or a person from area B moving and settling in area A. In either case, however, it is posited that there was a recognition of these areas being distinct yet related because a warrior could move between them and maintain his social role and identity in both environments (i.e., what Kristiansen and Larsson [2007] consider to be warrior institutions). The mobility of craftsmen is a factor which is equally plausible, but, in this case, we also face two or more metal-working traditions that crossed boundaries and transported meaning with them. It is suggested here, however, that it was far more common for warriors to move than craftsmen as the very *raison d'être* for warrior identity was that they crossed boundaries and came into conflict with perceived 'others'. This said, it is the translation of a warrior's needs and traditions into artefactual form that was the province of the craftsman. As such, we will begin by looking at some regional differences in the technological choices made during the manufacture of swords. Spearheads follow a very similar pattern to swords in terms of alloy traditions, but regional preferences in form are far more pronounced: a section on spearheads follows on from the discussion about swords.

THE TECHNOLOGICAL CHOICES OF SWORD-SMITHS

The study of the form of objects has become increasingly dominated by typological analyses. These studies seek to identify characteristic aspects of artefacts and to use these to create groups that have craft, spatial and chronological significance. Kristiansen and Larsson (2005; see also Bradley 2005: 145; Molloy 2011) have criticized the development of this approach into a subfield in itself, one increasingly removed from social analysis, whereby the nuts and bolts of making groups have become something of an end unto itself. This is not to deny the worth of groups formed under this premise, which are the backbone of artefact discussion, but criticism may be levelled at the fact that taxonomic analyses of artefacts have been reduced to a group-defining exercise. The groups that are thus formed are bounded and separated from each other on the basis of dominant (yet subjective) aspects of similarity which underplay other less dominant or (to the specific investigator) more superficial features. While this bounded approach makes it far easier to plot distributions on maps or

create developmental sequences, it subordinates the expression of ancient craft traditions to the quantificatory fetish of the modern archaeologist and our predilection for dots on maps as meaningful expressions of cultural connections (Needham 1993). By this I mean that those minor differences that are sacrificed may represent regionally relevant traditions and that they could spatially and chronologically cut across the boundaries of our typological groupings. This is not an indictment of the process of grouping (and subgrouping, and sub-subgrouping), but rather a qualification for the differences that I will discuss presently because they have clear regional significance despite not really having the ability to register in the typological approach.

In this current study, traditions are revealed as being conservative in some particular aspects but looking to the global reality in other ways. In particular, it is demonstrated that there is a distinct difference between the Peloponnesian, Central Greek and South Balkan (Albania, FYRO Macedonia, Bulgaria) tradition in the manufacture and use of Naue II swords. This group of swords will be looked at in particular detail given their regional occurrence across very wide areas. They can briefly be described as parallel-edged weapons with a handle cast as one with the blade and covered with organic hilt plates. They were short swords, with considerable variety, although they typically measured between 55 and 70 centimetres and weighed 400 to 700 grams.

ALLOYS AND CRAFT

Alloys

Some notable patterns emerge in relation to the published data on alloys of Naue II swords from Italy, Hungary, Slovenia, Albania and Greece. For swords, it is first necessary to take this wider regional perspective to gain a large enough dataset, and secondly, to characterize the regional idiosyncrasies of Naue II swords in the Aegean area. It is generally assumed that an alloy of 7–12 per cent is optimal for swords, although we might assume that the higher end of this spectrum may be preferable. The data from different regions show that weapons did indeed fall within this range, but that there was regional variation in preferences and practices. The level of elements such as tin included in alloys may relate to economic, social, technological and aesthetic factors so the regional patterns that emerge from alloy choices have social significance. It can be noted that, in some areas, Naue II swords were not manufactured from the same alloy used for other bronze artefacts. The most striking case is Slovenia where we have the benefit of a thoroughly researched and published dataset of compositional analyses (Trampuž-Orel 1996). The average tin content of artefacts (excluding ingots) is 5.7 per cent, with objects very rarely exceeding 10 per cent, in the 'large hoards of mixed composition' deposited in Horizon II

(Turk 1996), or roughly 1200–1000 BC. Swords fall markedly higher than this, with their average percentage of tin being 8 per cent. The actual alloy range for swords is wide at 4.5–11 per cent, with hoards such as Hočko Pohorje in east Slovenia having a majority (4/7) above the average and Debeli Vrh in West Slovenia having a majority below the average (5/6). Swords farther east in the Carpathian basin follow a very similar pattern to Slovenia with none having more than 11 per cent (Liversage 1994). The few details currently available for Italian swords (Giumlia-Mair, Albanese Procelli and Lo Schiavo 2010; Hook 2007) from Sicily and the Calabria and Lazio regions suggest that the same alloy range was in use because all published examples fall between 7 and 10 per cent tin.

Aegean swords have a markedly different pattern in their alloy ranges, with a much higher proportion of high-tin alloys, typically in ranges that exceed the maximum values of the other areas mentioned. The average for 'local'-type swords is 11.5 per cent,[2] while Naue II swords from Greece have an average of 10.2 per cent which, allowing for the small datasets, are close enough to suggest broad parity in technologies (Koui et al. 2006; Mangou and Ioannou 1999; 1998). However, the average is slightly misleading for the Naue II swords (but not the local types) because they fall into bi-modal ranges of less than 9.2 per cent (7/16 pieces) and greater than 10.8 per cent (7/16 pieces). The first group matches the Italian and Balkan traditions closely, but, in the second group, virtually all exceed the upper limit of swords in the other areas, with a higher proportion of swords having high-tin alloys in general. Weapons from Albania (Koui et al. 2006) follow a similar pattern, with alloy ranges being 5–8.5 per cent tin and 11.5–12.6 per cent tin, with three cases of each for swords. Analyses of six swords in Crete are available in which the Naue II and Aegean Type Fii sword from Mouliana have 8.2 per cent and 8.3 per cent tin, respectively, whereas the earlier (LH IIIA) Aegean Type D swords are exclusively in the higher alloy range for swords, with 11.2 per cent to 12.2 per cent tin. This suggests that, on Crete at least, there may have been a shift from the higher to the lower range of tin content following the collapse of palatial control, although datasets are admittedly very limited.

Higher tin content (up to around 14 per cent) increases the hardness of a copper alloy. The actual hardness in an artefact is also affected by heat treatment and cold working, both of which affect the disposition of tin in the alloy and the microstructure of the bronze. For our purposes, the general rule is that increased tin facilitates increased hardness. However, all other things being equal, it also makes the metal less ductile/pliable, meaning that it is more susceptible to chipping or breakage. The balance met in the alloy choice and

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[2] This is based on four pieces. If the anomalously high piece from Hexalophos with more than 14.6 per cent tin is discounted, the tin content ranges from 9.9 to 10.9 per cent, giving an average of around 10.3 per cent.

the subsequent mechanical and heat treatment therefore work between the trade-off of hardness versus toughness, whereby the former affects the penetration power of the edge when cutting while the latter affects the durability of the object. When cutting with a sword, the opponent is obviously seeking to avoid being cut (!), so there is less predictability in the mechanical forces a blade edge will be subjected to (e.g., hitting flesh or bone, another blade edge, a shield, armour, the ground) than one would face with an axe being used to strike an obviously static target such as a tree. The choice of hardness versus toughness is therefore a cultural one, and so the balance of tin in the alloy relates not only to the intrinsic value or availability of tin, but to cutting-edge design preferences. We may also consider that local traditions in the design of the cutting edge on swords were tied in with more general perceptions of cutting-edge preference that included sickles and axes, for example, so that modern functionalist views of optimizing cutting-edge efficacy may have been viewed quite differently by Bronze Age users. Of course, we must also consider that the availability of tin was a factor shaping traditions of alloy because it is possible that supplies were variable. Even so, we may assume that compromises in tin use for weapons would be less marked than in tools because their mechanical performance related quite literally to life-and-death situations. Differences and similarities in tin content between areas may thus be viewed as a reflection on cultural and craft choices as well as simple economic concerns.

Rivet Holes

We can also observe that the number and location of rivet holes could relate to craft choices, revealing regional patterns of production techniques (Fig. 6.1). Superficially, such a minor aspect may be considered incidental, but we should consider this as being tied specifically into local workshop and regional traditions. Such practical matters may be transferred as an apprentice learns from the master, although they do not necessarily have any cultural meaning and may not even have been recognized as relevant to the past sword-smith. For us, however, regionally relevant traditions emerge by simply plotting the number of rivet holes in the shoulders of Naue II swords. Three rivet holes in each shoulder is a predominantly Italian tradition for the most part, although examples with two rivet holes are also numerous there. Looking to the Aegean, the only area to mirror this tradition is Achaea, an area that we know from other evidence had some links with South Italy (various in Borgna and Càssola Guida 2009; Eder and Jung 2005). Moving north, it is notable that a preference for single rivet holes in the shoulders is quite striking in a band stretching from Albania to Bulgaria, although the use of two rivet holes also occurs. Moving to the Balkans, the small dataset from Montenegro
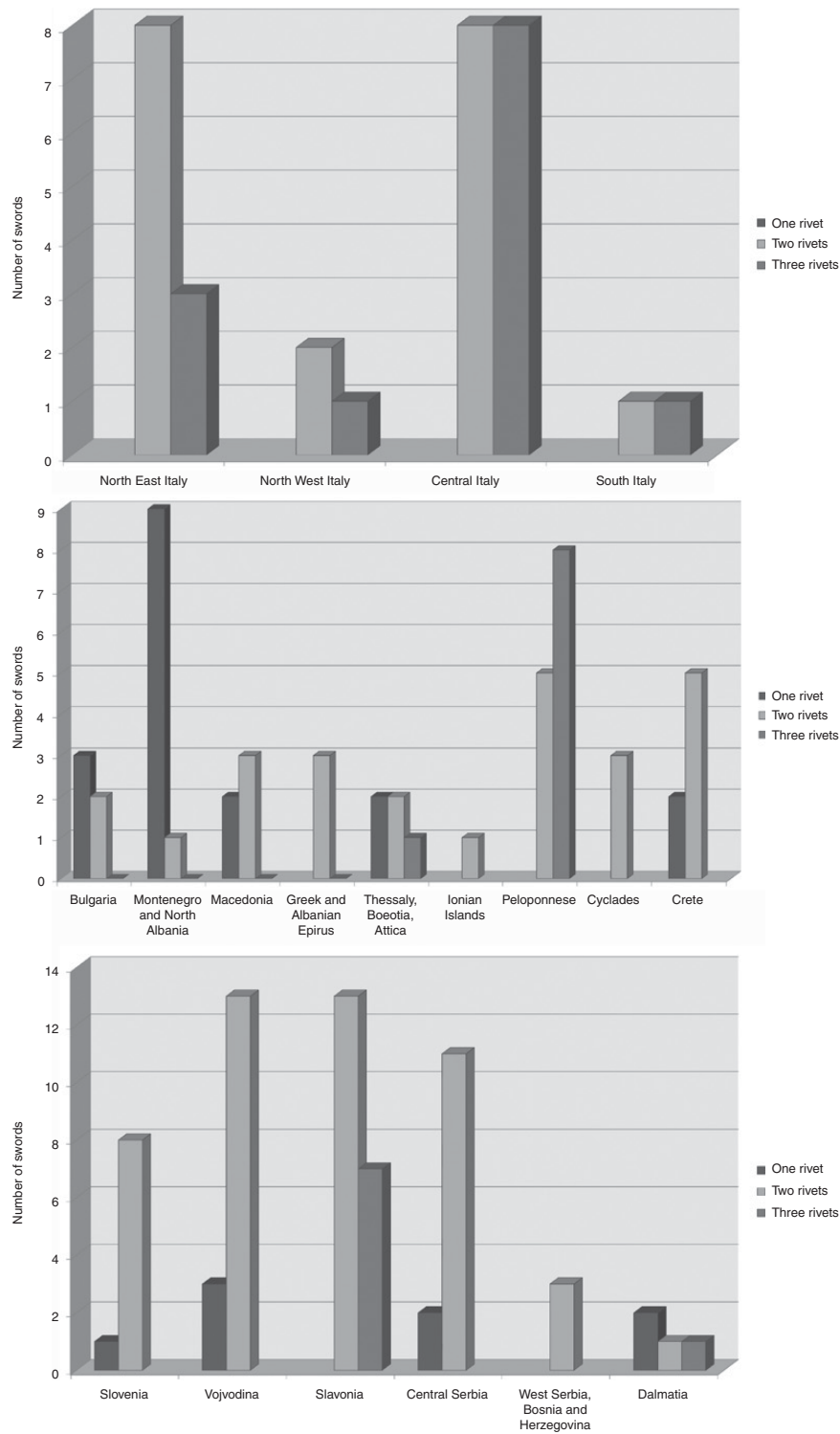
6.1: Number of rivet holes in each shoulder of Naue II swords showing intra- and inter-regional variation. *Top*: Central and West Balkan peninsula; *Middle*: South Balkan peninsula; *Bottom*: Peninsular Italy.

has two swords with one and two rivet holes, respectively. Dalmatia reveals a mix of one, two and three rivets, presumably a result of its geographic location. In Slavonia, Croatia, the east-west Sava River provided a path to the Dinaric Alps and from there to the Adriatic. We can observe that the proportion of two or three rivet holes in the shoulders here is closer to the Italian tradition than it is to the lands to the east in the Central Balkans and the Carpathian Basin. Indeed, the relative proportion of three to two rivet holes is lower in the north-east of Italy (ca. 1:2) than the south (ca. 1:1), the former being the same as Slavonia (ca. 1:2). Moving to modern Slovenia, Serbia and Bosnia Herzegovina, the tradition of two rivet holes is dominant, though occasional examples of one and three rivet holes exist. Moving full circle south to central northern Greece, the few known examples suggest greater parity with their northern than southern neighbours, with only one example of a three–rivet hole sword known.

Blade Design

A more obvious regional divide in sword forms can be identified on the basis of the cross-sections of Naue II swords. Swords in Albania, Macedonia, Aitoloakarnania, Thessaly and Attica do not have the elliptical cross-section typical to the Balkans and Italy. Instead, they have a midrib flanked by two-small ridges that are clearly a stylization of the midribs of earlier Type Di swords common throughout the Aegean (Fig. 6.2). This feature cuts across typological groups and is here characterized by its 'faux-midrib', which will be used as an identifying phrase for the convenience of discussing swords with this feature. The midrib is not the only defining feature of this variety of Naue II sword because, with very few exceptions, they are longer than the typical, or classic, Naue II swords (Fig. 6.3). These latter varieties are most frequently around 60 centimetres in length or less (87.5 per cent of published examples are <65 cm), whereas the faux-midrib examples typically exceed 70 centimetres in length (80 per cent of published examples are >65 cm). A smaller subgroup occurs consisting of two Albanian faux-midrib pieces measuring 44 centimetres and 50 centimetres, which is closer to the size range of Aegean-type swords or Cretan Naue II swords of LH IIIC. Crete has produced one

6.2: Classic (*top*) and faux–midrib Naue II swords, from Siteia and Graditsa, respectively.
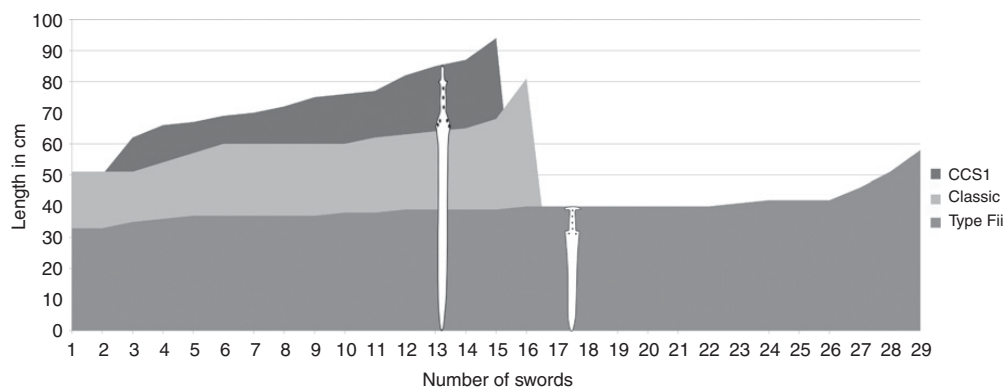
6.3: Length of Naue II classic and faux-midrib and Type Fii swords from Greece, FYRO Macedonia and Albania.

example (in contrast to six or seven classic pieces), and the Peloponnese (excluding Achaea) produced none (Fig. 6.4). Achaea represents an interface area where three out of the eleven swords available to the author were of this form. In the rest of modern mainland Greece, Albania and FYRO Macedonia, the faux-midrib variety dominates in all areas. A notable exception is in Epirus, where the only known Naue II sword is of sub-Mycenaean date (Douzougli and Papadopoulos 2011).

Use-Wear

Use-wear analysis by the author on seven Type Fii swords from Epirus in Greece revealed that in all cases there were significant signs of use, primarily resharpening. This frequency of use has not been observed on the swords deposited in any other area of Greece. It could be argued that this is simply a result of bronze and/or bronze-smiths being harder to come by, meaning that weapons were kept in circulation longer than in other areas. This point of view, however, is problematic because it reduces the objects to their economic value. The interment of well-worn swords in graves can equally be seen as the use of objects that have identifiable biographies in their own rights (whether being the personal belongings of the deceased or not). The use of pristine swords in other areas may be due to their perceived value as 'new' and untarnished objects (physically and perhaps morally). While it has to be noted that blade edges in all areas were not consistently preserved (they can be preferentially corroded due to their thinness), the neighbouring areas of the Ionian Islands and Macedonia, for example, showed notably less evidence of use-wear on swords where edges were preserved. Thus use-wear analysis may reveal aspects of different social value systems related to the biography of weapons which varied according to region.
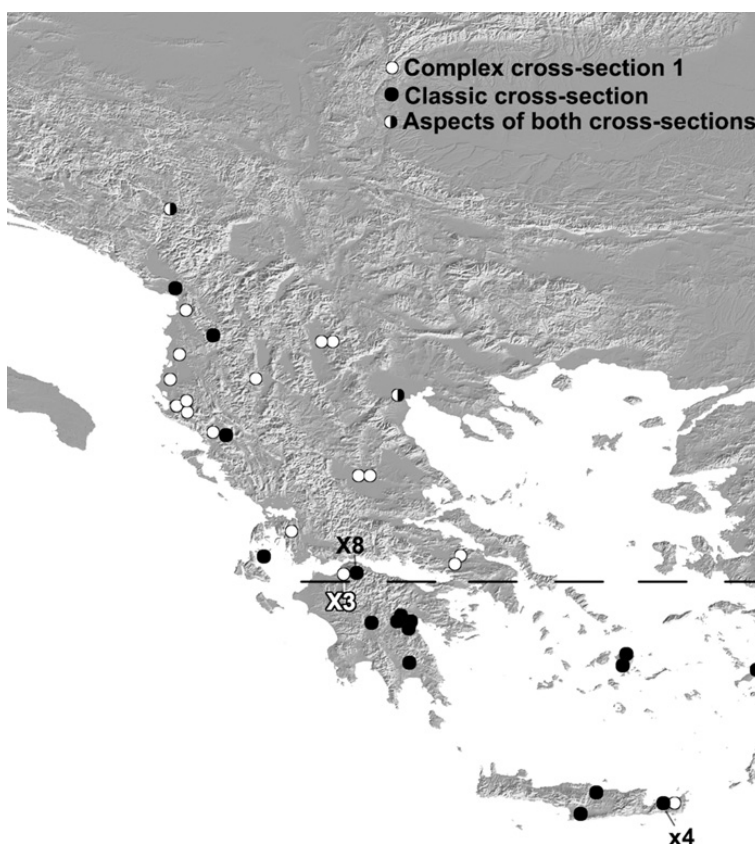
6.4: Distribution of classic and faux-midrib Naue II swords.

SPEARHEADS

The final artefact group discussed in this chapter is spearheads. The Aegean tradition of spearheads had been diverse; following from a series of shoe-slotted spearheads in the Middle Bronze Age, the Late Bronze Age tradition consisted of a socket and a blade that was typically greater than 10 centimetres. The earlier varieties frequently had longer blades, although the average length of blade (and the spearhead as a whole) was reduced over time, meaning that, in the period discussed in this chapter, spearheads were typically 20–30 centimetres in length with the blades constituting roughly half of the length. In the Aegean tradition, the sockets were cast as a sheet and hammered closed to form a cone. The tradition of casting sockets whole using a core plug in a bi-valve mould has often been considered as introduced from a generic 'north' (i.e., the Balkans or Italy).

The spearheads from the Uluburun shipwreck (Pulak 1988) are not fully published, but available images suggest that they are of a broadly Italian-Balkan form. Publications that separate the Italian and Balkan series are currently rare

(but see Mozsolics 1967), and many of the same forms occur on both sides of the Adriatic. Thus, for example, it is hard to tell where the leaf-shaped spearhead from Kephallonia (Avila 1983 cat. no. 134 [Museum Inventory no. 915]) originates, as it would find good parallels in Italy (Salzani 1994), Croatia (Vinski-Gasparini 1973) or Serbia (personal observation). The flame- or violin-shaped spearheads that are common in the Balkans and Italy are known through occasional (probable) imports in North Greece (Fig. 6.5). These may have been the inspiration for the development of a very distinctive style of spearhead (Avila Type G/Snodgrass Type B; although he mistakenly calls it 'lanceolate' in form) in the area of Epirus and Albania (Snodgrass 1964). These typically had a faceted socket and a distinctive violin-shaped blade. They occur in other contexts, notably in Thessaly and Achaea, but there is little doubt that they are
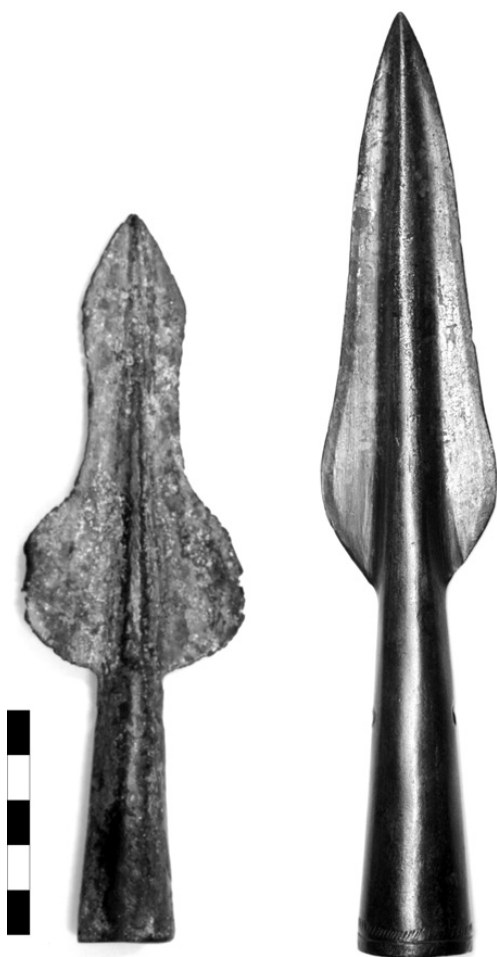
6.5: Albano-Epirote violin-form spearhead and Balkan flame-shaped spearhead, from 'Thebes', Greece and Bingula Divoš, Serbia, respectively.

a regional tradition on the basis of the find spots of the majority in the former two regions and their relative percentage in relation to other types in all areas, whereby they dominate the repertoire in Epirus. Snodgrass had argued for their origin in the Danubian area, but it is clear that most of the Greek examples are of a distinct regional tradition that was at best inspired by imports.

Many spearheads are uncritically ascribed to a generic 'northern' form based on features such as the solid cast socket. With evidence for a distinct Albano-Epirote tradition in manufacturing spearheads of this technology, and the Ulburun shipwreck giving unequivocal evidence that this general form dates to at least as early as 1300 BC, such generic treatment is problematic. Most of the types found in Greece are likely to be local products, and, as with swords, exact matches cannot easily be found in the areas they are supposed to originate from. It is nonetheless clear that the idea and the technology ultimately derive from Italy and/or the Balkans, but how these entered Greece is a different and more complex issue.

We can note the spearhead mould from Kastanas (Hochstetter 1987) in Macedonia of LH IIIC date which was used to produce solid-cast spearheads along with another example which was recently identified at Tiryns (Rahmstorf 2008). This manufacturing tradition was certainly represented in Macedonia, Albania-Epirus and the Peloponnese by LH IIIC, and no doubt in other areas as well. A spearhead from Agrilia in Thessaly, identified as Balkan in form by Harding (1984), is made from a bronze far more typical of the Aegean region according to its trace elements (Molloy and Doonan, forthcoming). We could suggest that Balkan smiths were working in the Aegean area in some cases, but in general it seems as though these technological traditions were being adapted in parts of the Aegean, in particular the Albano-Epirote area (possibly incorporating the Ionian Islands). Two lanceolate spearheads with solid-cast sockets from Mycenae (Avila 1983) are particularly interesting because they find few if any parallels in Italy and/or the Balkans, but are a form more common in continental Europe. However, with reference to equifinality, we can mention that the blades have similarities to Avila Type VII–VIII, and the sockets have rings (imitation or actual) of the Aegean split-socket tradition.

Aegean-type spearheads, such as Avila's Types IV, VII and C with the characteristic split socket, also occur widely, suggesting that manufacturing and use traditions were commonly practiced. In Bulgaria,[3] many swords of Aegean form developed exaggerated features to mark a distinct regional tradition, but the spearheads were more consistent with the types and technology of spearheads from Greece (Leshtakov 2011). In general, it is clear that there were

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[3] Modern national borders are provided for clarity of discussion, although they are not, of course, considered to have been historically meaningful.

at least four major traditions of spearhead manufacture in Greece in LH III B–C: the last of the local Aegean tradition; the Albano-Epirote forms, actual imports from Italy/the Balkans; and local products based on experience or knowledge of that latter group (notably in Crete). Unfortunately, spearheads do not group as easily as swords, neither in the descriptive nor typological sense, and so they have been continually studied with markedly varying results each time in the determination of groups or categories (Avila 1983; Cassola Guida 1992; Höckmann 1980; Snodgrass 1964). Here, it is concluded that some regional traditions can certainly be determined, and that geography plays a role in this, but that some general forms were universally used irrespective of region, with a notable divide between the north and south of the Gulf of Corinth and distinct traditions in Crete.

CONCLUSION

The case study of sword no. 1049 from Pazhok, Elbasan, in the Archaeological Museum, Tirana (Koui et al. 2006) can usefully lead into the concluding remarks. It has the characteristic faux-midrib cross-section, though at about 66 centimetres in length, it is on the border between this group and those with classic cross-sections. Its single rivet-hole in each shoulder mark it out as characteristic of a trait found from Albania across to Bulgaria, though its 12.6 per cent tin alloy is very much in the Albano-Greek workshop tradition. The terminal end is damaged so we do not know if a pommelspur was ever present. The trace elements are quite atypical for metals in circulation in Greece but find good parallels in other Albanian weapons. Allowing for analytic biases, these still stand out as being metallurgically distinct. In this case, we could argue that we have a local metal (whether from ore or recycling pools) being used following a local superficial craft tradition (rivet layout), but using an alloy type common only to Greece and Albania with a blade with a cross-section derived from the Greek tradition. This combination is unlikely to arise incidentally, but relates to varying interpretations of encounters between the craftsman and warrior who made and used this weapon and those operating in neighbouring regions. The mixed-up heritage of this sword, along with most others, may therefore not reflect a concoction of random variables, but choices based on the confluence of traditions and lived experiences, as well as on the ongoing craftsman–warrior dialectic.

We may consider warfare and raiding to be a mode of connectivity that widely maintained an international weapon package. This was in use in areas that had vacillating political relationships in an increasingly impoverished trading environment. Mobility of people throughout LH IIIC, whether they were traders or raiders, was evidently part of the rhythm of societies that maintained a global military tradition with local variants. Such mobile persons may have always been anchored in their homelands, returning there with their possessions that were

key to both international and local power dynamics. These may well be Kristiansen and Larson's (2007) 'warriors on the move', where wealth may have been measured as much in terms of the places visited, people met and stories told as it was in the paltry wealth trickling around the postpalatial world.

The specific regional patterns in alloy, rivet and midrib features of swords represents different, only sometimes overlapping, aspects of technological choice that relate to both the craftsmen producing weapons and the warriors who used them. In each case, these are relatively minor variations on a common theme, but that they constitute different patterns suggests that the agencies behind them moved along different pathways. While it may be foolhardy to allocate particular weapon traditions to particular ethnic or cultural groups, it is equally problematic to consider their diversity as devoid of cultural meaning. It is noteworthy therefore that the faux-midrib type sword occurs in only one instance (Mouliana, Crete) in the lands that were later associated with the Dorian dialect – the Peloponnese and Crete – whereas it is the dominant form in all other areas of Greece (perhaps ironically where the Dorians of myth were said to come from within this same timeframe). Those same Dorian invaders were said to have pushed the Achaeans out of their homelands and into the historical area of Achaea, and this was the only place in the Peloponnese where faux-midrib forms are found. These may be coincidences of recovery patterns, but, at the same time, they are indicative of potentially meaningful differences in tradition which often lie below the resolution of typological approaches alone or the general artefact assemblages which are more reflective of communities (e.g., pottery) than individuals (e.g., swords). We therefore need not consider the Dorians to represent a directional migration, but we can find them useful as a symbol of mobility and cultural diversity in the reconsolidating postpalatial world of the Aegean Bronze Age.

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CHAPTER SEVEN

THE EMERGENCE OF SPECIALIZED COMBAT WEAPONS IN THE LEVANTINE BRONZE AGE

Florian Klimscha

INTRODUCTION

From a geostrategic point of view, the Levant is one of the most interesting areas for the diffusion of innovations into the Bronze Age worlds: not only does it form a bridge of land between Anatolia, Mesopotamia and Egypt, but it also offers access to the Eastern Mediterranean. During the Levantine Middle and Late Bronze Ages (second and first millennium BC), close contact was established with Crete, the Aegean, Egypt, Southwestern Anatolia and Cyprus, through which goods, rituals, styles and techniques were exchanged, as suggested, for instance, through trade via the Uluburun vessel (Yalcin, Pulak and Slotta 2005) and the wide distribution of amber objects (*inter alia* Czebreszuk 2011; Negroni Catachio 1999; Radina and Recchia 2010).

Looking for structural shifts in the modes of exchange and production in the Early Bronze Age in the Levant is therefore not arbitrary and might serve as a model for other regions.

Near Eastern copper swords are known from the late fourth millennium onwards, while in Europe they were not seen for another millennium and a half. According to Everett Rogers (2003) diffusion can be understood as several stages where (1) the relative advantage, (2) the compatibility, (3) the complexity, (4) the individual triability and (5) the observability of an innovation decides whether it is accepted or not. This makes increasing numbers of people over time accept the innovation until there is no more demand,
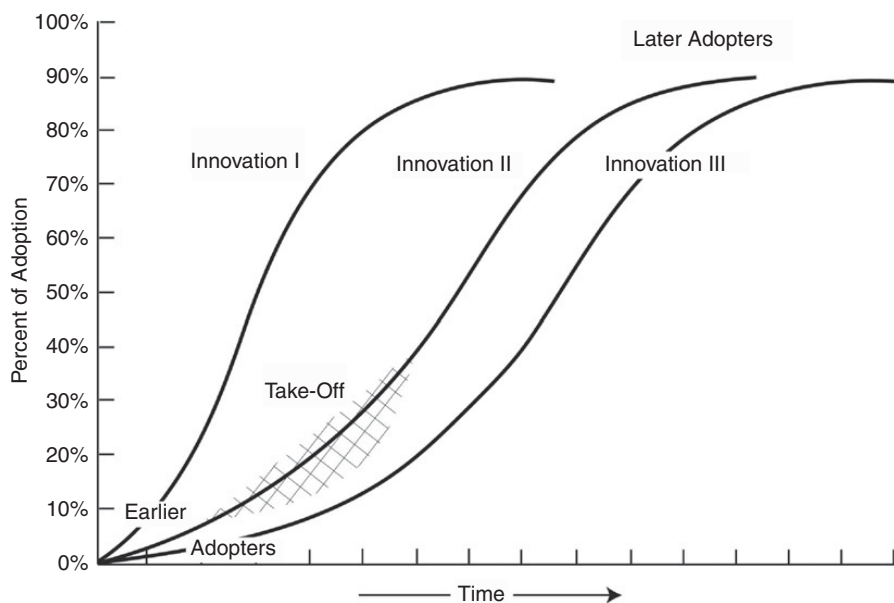
7.1: The diffusion of innovations. (Graphic by Rich Potter after Rogers 2003: 11, fig. 1.2.)

implying that it is accepted and thereby ceases to be an innovation (Fig. 7.1). It is not possible to thoroughly discuss why swords were adopted so late in Europe in this chapter, but a discussion of the sociotechnical context of early metal weaponry in the Levant will highlight similarities and differences. This chapter will deal with several aspects: but first, a slight glance at the newly awakened interest in an archaeology of warfare is taken and my theoretical framework will be laid. This will be followed by an introduction to the local chronology and a short description of early swords and their social context.

CHRONOLOGY AND AREA OF OPERATION

The area of operation will be the Southern Levant (i.e., the modern states of Israel, Jordan, Lebanon, the Palestine Autonomous Territories and parts of Syria; Fig. 7.2) because the state of research is relatively high in this region and therefore comparable to Europe. This chapter takes a long-term perspective on the evolution of warfare techniques. It will begin with the Chalcolithic, represented by the Ghassulian culture during roughly the second half of the fifth millennium BC (Gilead 1988; 2009). It is superseded by the Early Bronze Age (Milevski 2011; cf. Regev, de Miroschedji and Boaretto 2012; Regeve et al. 2012 for the chronology). The Phases Ia, Ib, II and III are currently hotly debated as new C14 dates from some sites suggest a considerably earlier beginning (cf. Golani 2004; Klimscha 2009), and there are several chronological programs running (Regev, de Miroschedji and Boaretto 2012; Regev et al.

7.2: Map of the southern Levant with sites mentioned in the text.

2012). It seems safe to say at the moment that Early Bronze Ia and b fill the fourth millennium, while Early Bronze II and III take place during the third millennium. Early Bronze IV is sometimes also called the Intermediate Bronze Age because large numbers of weapon graves as well as tin bronze appear. It is therefore considered to be the beginning of the true Bronze Age in the European meaning of Reinecke's Bronze Age. Egypt will also be focused on from time to time because it plays a decisive role in this narrative.

MODELS FOR PREHISTORIC WARFARE

Dealing with warfare in the prehistoric past means dealing with the positions of Jean-Jacques Rousseau and Thomas Hobbes. Were primordial humans peace-loving or natural born killers?

Lawrence Keeley (1996) argued that warfare in prehistoric societies was an everyday business. It was neither less brutal nor less lethal than modern warfare between states. Apart from ritualized battles, massacres and raids were common forms of solving conflicts. This is the type of warfare Herfried Münkler (2007) called 'The New Wars'; a term which was introduced by Mary Kaldor (1999) to describe the high level of violence in conflicts in former Yugoslavia. Münkler, conversely, came to the conclusion that the so-called New Wars were a general type of conflict that appeared regularly when violence in conflicts was not monopolized by states but 'privatized'; they are structurally similar to the Balkan Wars or the Thirty Years War and happen to reappear in the guerilla fights of modern *resistancias*, freedom fighters and terrorists. This frees the term 'war' from Clausewitz's notion of being exclusively possible between states and also allows using what Münkler describes as *smouldering* (German *schwelend*) *wars* as a model for pre- and protohistoric warfare. Charismatic leaders used a *Gefolgschaft* of warriors to raise an *economy of violence* in which they controlled the transport and accumulation of goods, especially those termed prestigious. New Wars could affect whole regions and enabled warlords to seize and perpetuate their power.

Massacre finds like Talheim near Heilbronn, Southwest Germany, in which thirty-four humans were slain with shoe-last celts, suggest that this kind of warfare has been used periodically since the Early Neolithic (Wahl and König 1987; cf. also for the topic of Early Neolithic massacres: Husemann 2006; Petrasch 2001; Teschler-Nicola 1996; Windl 1996; Windl 1999). New Wars are therefore, in fact, older than the Old Wars.

What does this mean? Do we have to imagine an eternal Thirty-Years War in prehistory? Or do such finds 'just' represent periods of intense conflict? Several authors seem to advocate the first option, using either Hobbesian archetypes (Sofsky 1996) or ethnographical data (Clastres 2008; LeBlanc 2003). The latter is not unproblematic: most societies researched by social anthropologists had contact with so-called complex or industrialized societies, or knew neighbouring groups who had. The living space of such groups were increasingly reduced during the period of colonialism and, as a consequence, of heavy industrialization.

Therefore, they in no way represent an original way of life. Although ethno-graphical data can be very good for modelling human behaviour on a very broad, comparative level, one should be extremely careful about simply generalizing the living conditions and social relations of the few groups who have evaded Western

influence to model a general and universal stage of human social evolution (cf. also Wolf 2010).

From the archaeological record it also has to be concluded that Talheim and similar finds are only one facet of human conflicts in prehistory, there is also plentiful evidence for completely different and chronologically, as well as geographically, highly differentiated conflict strategies (cf. Guilaine and Zammit 2001; Harding 2007; Ivanova 2008; Otto et al. 2006; Peter-Röcher 2007).

A TECHNICAL ARCHAEOLOGY OF VIOLENCE

Warfare will be approached from a technological point of view in this chapter, following V. Gordon Childe (1951), who demonstrated the strengths of putting technology at the centre of attention. The analytical tool for this is the *châine opératoire*, a term which was invented by André Leroi-Gourhan to understand the different steps of production, usage, repair, discard and recycling which defined the shape of lithic artefacts. Analysing metal weapons in a *châine opératoire* helps to clarify the social dimensions of technology.

The word 'technology' already implies that, apart from the artefacts (the mechanical aspect of the technique), there is knowledge, organization or know-how involved (the symbolic aspect of the technique). Every technique requires specific bodily movements or embodied knowledge.

Technique is decisive for successful warfare. Examples from historical times are manifold: the Italian Historian Carlo Cipolla (1999), for instance, explains the military superiority of European colonial powers in the nineteenth century from a technological viewpoint: between the fourteenth and eighteenth centuries AD, the small size of sailing ships made it necessary to reduce the size and weight of cannons, which resulted in a better manoeuvrability and quicker reloading times. This resulted in the usage of these cannons, which were designed for ship-to-ship combat, as superior field guns. The European periphery was therefore able to subdue the medieval centres of knowledge and innovation.

Even though it would be a misconception to explain the creation of empires in prehistory with only innovation in weapon technology, it is intriguing to analyse warfare as a set of techniques which can be communicated. The first contact between societies using different warfare techniques often gave rise to hybrid-violence cultures and allowed the diffusion of superior weapons and the necessary techniques which were often very creatively translated into new social and environmental conditions (cf. Walter and Kundrus 2012 for further examples).

An archaeology of technique is not simply studying the shape, dimensions and material of a sword, but understanding how and why it was produced, used and discarded.

Raw-material surveying, transport of ores
mining, smelting, melting, division of labour

Mêlée-drill, military hierarchies,
social consensus about warfare

Organization, Know-how
Symbolization

Production

Consumption

Furnaces, mining tools.
crucibles, moulds, smithing tools

Mining, ore crushing,
smithing

Artefacts/Machines
Mechanization

Embodied Knowledge /
Habitualization

Sharpeners, whetstones, sheath,
weapon-belt, defensive weapons

Fencing styles, parries, riding

7.3: Simplified scheme of the habitual, arithmetical and symbolic usage of swords.

Techniques do not only consist of the artefacts and their production, they also include habitual and algorithmic components; meaning that the artefact cannot be taught without proper training in how to use it or without a set and consensus of rules both ideological and symbolically backing up the social substructure (Rammert 2007: 16). Thus, from the procurement of raw materials, through the production, consumption and use until the final deposition, a given technology affects the society using it (Léroi-Gourhan 1988). Technologies can therefore be understood as being part of a network of social relations in which they are one actor among the various producers and users.

For swords, this includes diverse aspects (Fig. 7.3). Apart from casting and forging proficiency, it is also necessary to learn how to fight with swords because, in contrast to battle-axes, swords have no lithic predecessors. There also needed to be either a sanctioning of ranged weapons or constant drill to prevent warriors from routing when shot at.

These social implications of artefacts cause humans to behave differently. In the long run, technology therefore modifies society, but it is also affected by the social conditions in which it can evolve. When taking warfare as one aspect of society, it can be assumed that the modes of war were also determined by the available weapons. Weapons, on the other hand, will be adjusted to fit the way fighting is done. The interconnections are probably many and never ending.

Even though copper has been collected since Mesolithic times and was used for beads and hammered objects in the Neolithic, the pyrotechnical progress which led to smelting and melting around 5000 BC was a technological breakthrough (Radivojević and Rehren 2015; Roberts, Thornton and Piggot 2009; Yalçin 2000). In contrast to stones, metal can be recycled and shaped quite differently. This had important consequences on weapons and on how wars

were fought. In this chapter, specialized weapons shall be defined as those weapons which were only meant for fights between human beings.

SPECIALIZED WEAPONS IN THE CHALCOLITHIC

The first artefact group which has to be dealt with are maces. Maces can be used for very few tasks except killing snakes and fighting humans. The oldest metal mace-heads appear in a hoard find in the so-called Cave of the Treasure at Nahal Mishmar in the Judean Desert, Israel (Bar-Adon 1980; Moorey 1988; Shalev and Northover 1993). The hoard contained 426 pieces of copper, stone and ivory; the majority of the finds, however, are copper mace-heads. All of the pieces were originally wrapped in a straw mat and hidden in a natural crevice of a cave. While the hoard was originally dated to the middle of the fourth millennium, new C14 dates from the straw mat and typological analogies make it clear that it in fact belongs the forty-third or forty-second century BC; this makes it nearly contemporary with the famous cemetery of Varna in Bulgaria (Aardsma 2001; Klimscha 2013).

The metal pieces fall into two categories: those made of pure copper and those of a copper-arsenic-antimony alloy. All tested mace-heads are made from pure copper, while various vessels, crowns and standards were made from alloyed copper (Shalev 1991). The importance of the copper mace-heads for warfare is difficult to assess. Casting defects on some pieces show that not all of them were made for practical use (e.g., Potaszkin and Bar-Avi 1980: 235). Typologically identical mace-heads are a common find in settlements, but they are made from stone, even in much later times (Fig. 7.4). The impact of

7.4: Stone mace-heads from Tall Hujayrat al-Ghuzlan, Aqaba, Jordan. (Photo: Becker, DAI Orient Department.)
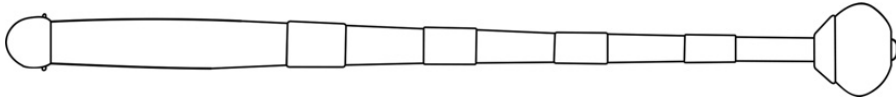
7.5: Byblos 'eneolithic cemetery'. Ivory mace-head with silver shaft. (Drawing by Christian Horn after Cauvin 1968.)

metallurgy therefore seems to have been relatively unimportant at first glance (cf. Klimscha forthcoming). However, the Nahal Mishmar finds are important for another reason. The alloyed finds were cast using the lost wax technique; although the alloys have been seen as unintentionally mixed Fahlores for a long time, new research at Abu Matar near Be'er-sheva in the Northern Negev Desert argues that the alloys were in fact intentional (Goren 2008: 376; Gošić 2008: 71–72; cf. also the ethnoarchaeological arguments brought forward by Lechtmann 1996). Thus, shortly after smelting was first practiced in the Levant, an experimental stage of complex casting and alloying techniques began for at least 300 years. Finds similar to Nahal Mishmar are also known from various other sites in Israel and Jordan (cf. Shalev 1991 for an overview), but the lack of systematic research on caves in the Northern Levant and Transjordan makes it difficult to say whether this is the prehistoric reality or the state of research.

Many graves in the Eneolithic cemetery of Byblos include imports from the Southern Levantine Chalcolithic and therefore should have the same age as Nahal Mishmar (cf. Gilead 1988). Of importance is an ivory mace-head with a silver shaft which the author interprets in a similar way as the copper mace-heads (Fig. 7.5): it was a weapon used as a status symbol. The same connotation of weapons with power can be seen in the richest graves at Varna, where stone battle-axes had golden shafts (Fig. 7.6). The connection between both sites is one of structure and not of contact. Metals, especially precious ones, helped to differentiate between people and was important for establishing hierarchies (Klimscha 2013; Klimscha forthcoming).

EARLY BRONZE AGE WEAPONS AND THEIR CONTEXT

The production of prestigious alloyed items does not continue into the Early Bronze Age as the production of several lithic tools (Rosen 1997: 112–115), like stone axes, does. It is assumed that a larger quantity of metal was circulating. In the Early Bronze, there were several innovations in various areas of social life; one important example was the appearance of new metal weapons: daggers with midribs. These have close parallels in contemporary Egypt, whence new prestigious items like ripple-flaked knives of extraordinary workmanship were imported (Fig. 7.6). The close interconnections between Egypt and the Levant resulted in an intensified exchange of commodities (cf. Hartung 1998).
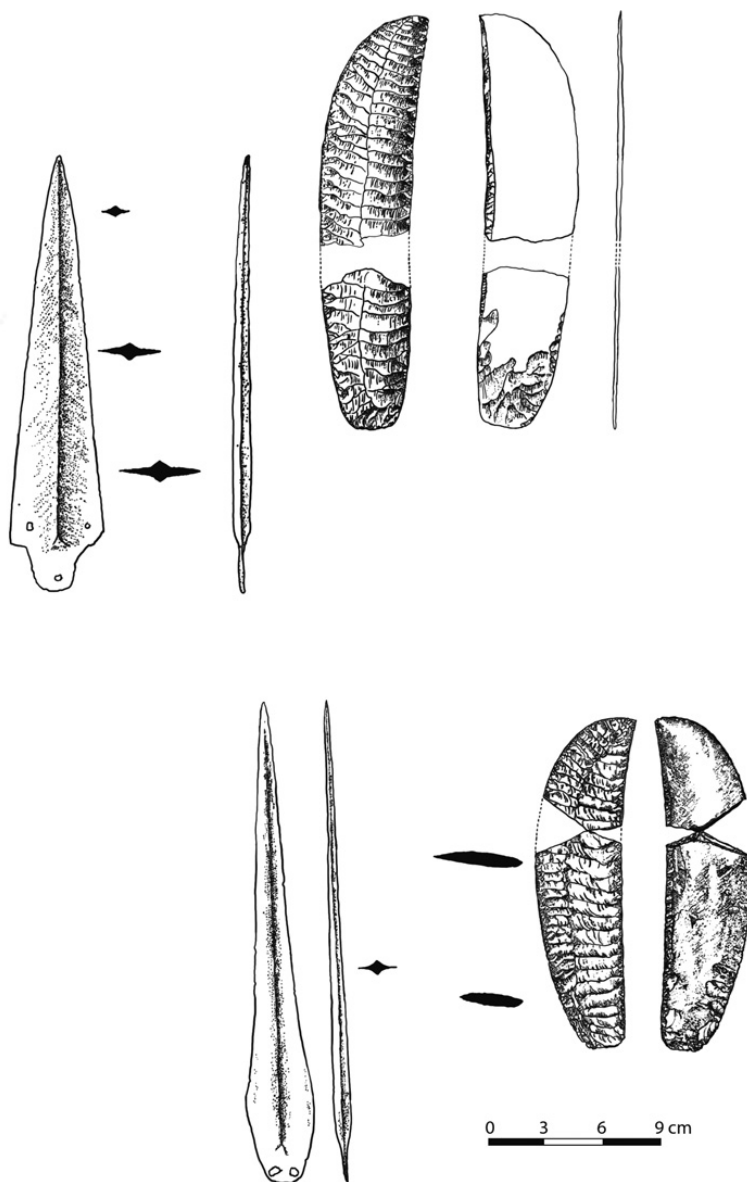
7.6: Early Bronze I copper dagger and ripple-flaked knife from Azor, Israel, and copper dagger and flintknife of the Naqada II period. (Drawing by Christian Horn after Ben Tor 1975 and Hartung 2001.)

While the fifth millennium exchange of metal objects was fairly local, limited to the area west of Jordan (Shalev and Northover 1993), a rise and restructuring of the sites producing metals in the first half of the fourth millennium (Genz 2000), as well as new transport technologies like the sailing boat (Wengrow 2006: 93, fig. 4.6) and the domestic donkey allowed more frequent contact (Grigson 1995; Klimscha forthcoming; Milevski 2011).

As a consequence, copper was cast into ingots and traded between Transjordan and the Nile Delta (Khalil and Schmidt 2009). The quantitatively and qualitatively better availability of copper, as well as innovations in the casting process, led to the Southern Levant adopting the international code of power of the fourth millennium BC: the copper dagger (Fig. 7.7; cf. Anthony 1996). The new interest in bladed weapons was connected with the oldest sword finds. In Tell Megiddo, several contexts were recently redated by Eveline van der Steen (2005: 2–3). This had consequences for a previously
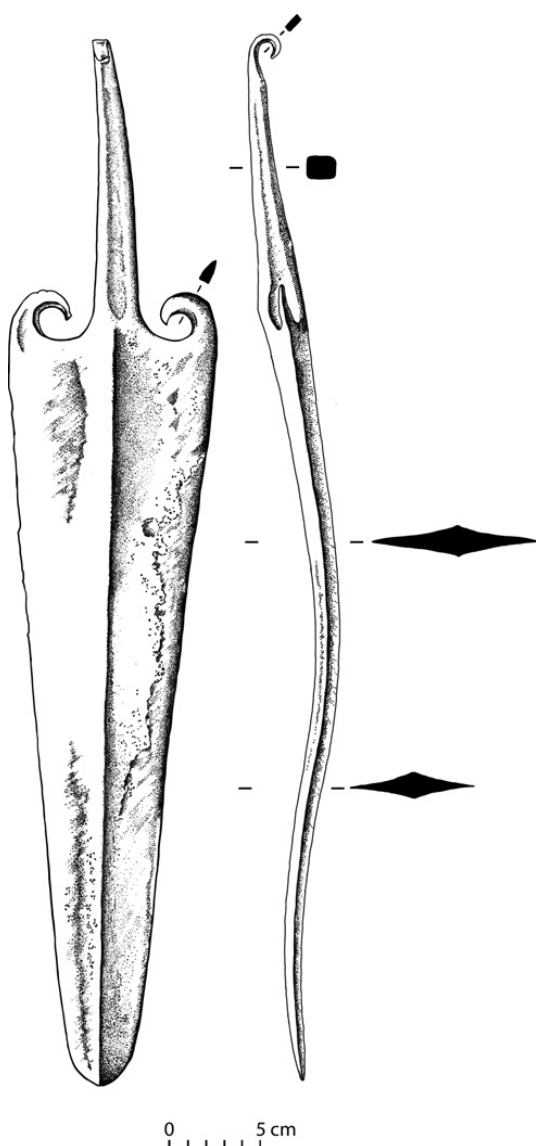
7.7: Copper sword from Megiddo dating to Early Bronze Ib. (Drawing by Christian Horn.)
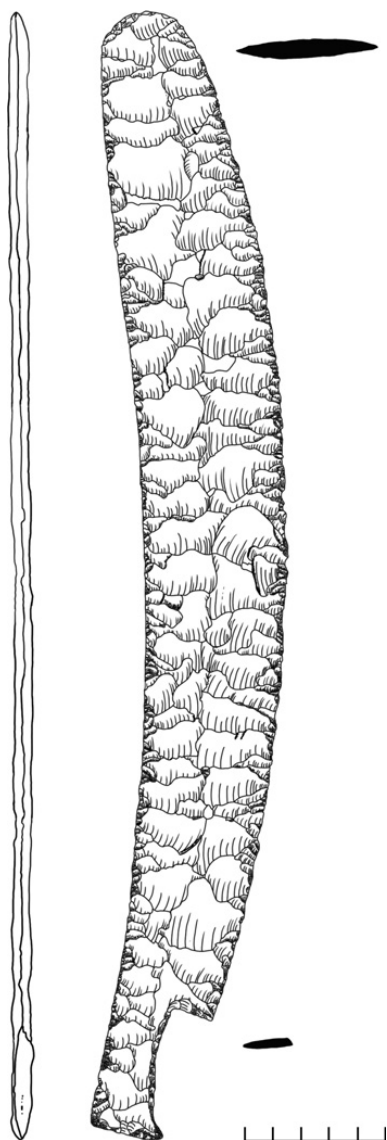
7.8: Abydos Umm el-Qaab; 72 centimetre-long flintsword from the Grave of Chasechemui. (Drawing by Christian Horn after Hikade 1997, 87, fig. 1.)

ignored sword from an altar which can now be dated to the Early Bronze Ib Period (i.e., c. 3300–2900 BC; cf. Regev et al. 2014; Fig. 7.8). The sword is 57 centimetres long, 2.5 centimetres thick and weighs 2.3 kilograms. Swords of similar sizes and from a similar age are found in Arslantepe as well as in the northern Pontic region (Palmieri 1981: 109–110).

These weapons are considerably longer than the daggers of Early Bronze Ia. The ability to cast long, yet thin and narrow objects without defects needs not only casting moulds but an expert knowledge of alloying and casting copper

(Hansen 2011). From the perspective of an archaeology of technique, the sword is therefore also partially the result of a tradition of nearly a millennium of experimentation. From the Late Chalcolithic to the Early Bronze, copper axes became significantly thinner while still remaining functional. It is difficult to say how this was achieved, but this kind of experimentation, as well as the production of daggers, could be seen as the technological components for the casting of swords (Klimscha forthcoming, fig. 9). If the sword is indeed just the consequence of experimentation with axes and daggers, then early swords need not necessarily be the result of diffusion at all, but could be explained by the independent progress of several long-existing workshop traditions and metallurgy knowledge reservoirs. The different typology of the early swords would indeed favour such a perspective: swords from the Caucasus, from Arslantepe and from the Levant do not resemble each other at all (Fig. 7.9).
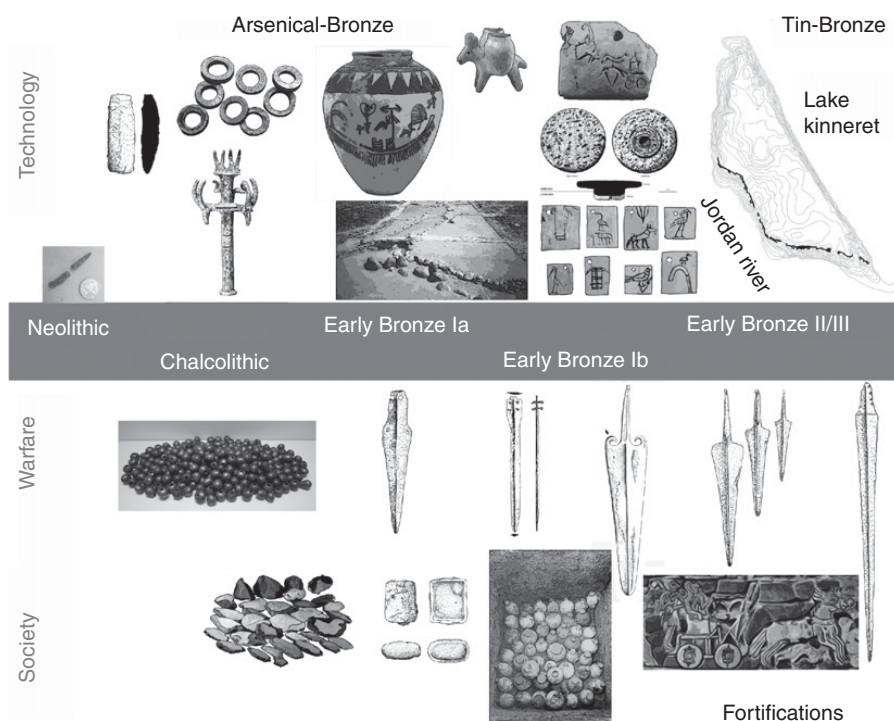
7.9: Socio-technological interaction during the fifth–third millennia BC in the Levant and neighbouring regions. (Drawing by Christian Horn after: Gopher and Tsuk 1996 frontispiece; Dayagi-Mendels and Rozenberg 2010: 28, fig. 20; Ben-Tor 1992, 92, fig. 4.6; Klimscha 2013; Khalil and Schmidt 2009: 30, fig. 12–13; Hartung 2001: 300 Abb. 55; Fansa and Burmeister 2004: 14 Abb 5 and 22 Abb. 17; Ben-Tor 1975: 4546 fig. 12–13; Klimscha, Siegel and Heemeier 2012: 129, fig. 7; Roux and Miroschedji 2009: 158, fig. 2.)

All of these early swords only seem to have had a ritual use. They were probably iconic pictures of real swords which we have yet to find. They nevertheless imply a hierarchy and an organization of warfare yet unknown. Fights between swordbearers need to be more controlled.

Swords allow new attack styles but require more training. To be an effective swordfighter required the ability to endure missiles and not run away; this made special drills and possibly armour necessary.

I argue that it is not by chance that the appearance of bureaucracies controlling the distribution of long-distance exchange can be seen in contemporary graves like that of King Scorpion at Abydos Umm el-Qaab U–j, where several hundred pots from the Levant marked with small bone and ivory plates demonstrating provenance and quantity of the contents were found (Hartung 2001). Trade also grew quantitatively – especially via the Mediterranean (Mark 2006). This dimension of exchange cannot be explained by gift-giving alone, which in turn implies a pacification of larger areas. The exchange of gifts was freed of social bonds, which were replaced by a bureaucracy controlling the circulation and distribution of artefacts (Klimscha 2013). The Southern Levant, whose metallurgy was very special in the Chalcolithic, was included into the system of economic relations between Egypt and the Northern Levant (Wengrow 2006: 127–150).

Yet swords are found more often in the early third millennium when also other weapons were produced, like the spear-heads from the hoard from Kfar Monash in Israel; these weapons are still made from arsenical copper and are accompanied by a large number of copper plates which were originally interpreted as a scale armour (Hauptmann, Schmitt-Strecker and Begemann 2011; Hestrin and Tadmor 1963). No copper swords are known from Egypt, but a 72 centimetre-long flint sword can only be understood as an imitation of copper weapons. It was found in the tomb of Khasechemwy at Hierakonpolis, the legendary conqueror of both Upper and Lower Egypt (Hikade 1997). Drilled armies of warriors who were able to face casualties from bows and slings without panicking could have been one means of achieving this. Early swords were the result of technical enhancements, but also reflect a new understanding of warfare in complex, hierarchical societies (Peter-Röcher 2011), where warriors were socially sanctioned not to flee in combat. While this made battles deadlier and more violent, the limitation of weapons must also have been bound to a code of honour (e.g., not using missile weapons), suggesting a different quality to the new style of warfare (Ignatieff 2000: 141–148). This may be ambivalent from our point of view and still allows the use of force against non-combatants. It was instead a set of rules limiting the totality of warfare common in smouldering wars (but very possibly a limitation which was only valid between warriors armed in the same manner). As explained earlier, early swords were only iconic pictures of

weapons simply used as prestigious items belonging to elite warriors. This would not necessarily imply a shift in combat, but it shows that combat-specific prestigious (or ceremonial) items were continually used since the Chalcolithic.

Other technologies were also now used more frequently for warfare, show-ing that it had reached a new dimension. The archaeological record shows fortifications, including towers and bastions, which can only be understood as reactions to intensified warfare. Oxen-pulled wheeled vehicles are known from the middle of the fourth millennium (Burmeister 2004), but the first use of equid-pulled battle wagons was contemporary with the sword boom as well as with the spear-armed ranks of warriors shown on the 'War Panel' of the Standard of Ur (www.britishmuseum.org/explore/highlights/highlight_image.aspx?image=an12543.jpg&retpage=19094).

CONCLUSION

How does this fit into the big picture? I have tried to demonstrate how smelting technology led to the casting of copper axes and shortly thereafter experimentation with complex metallurgy and the first metal weapons. Trade with metals was initiating closer contact between the Levant and neighbour-ing regions, which resulted in daggers and Egyptian flint knives substituting the Chalcolithic prestigious objects. It was closely interconnected with new means of transport, but demographic factors can also be seen in the appear-ance of complex irrigation systems that allowed settling the desert regions (Klimscha et al. 2012). Several means of controlling trade were among other innovations in the second half of the fourth millennium, especially wheeled vehicles and the first copper swords. This 'package' of technologies was then unleashed on the world of the third millennium and the basis was laid for building chariots of war, even longer swords, spearmen formations and the first empires. The final act for the formation of the Bronze Age of the Eastern Mediterranean, with its chariot-driving warriors, would then begin.

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CHAPTER EIGHT

BEYOND THE GRAVE: CRAFTING IDENTITIES IN THE MIDDLE BRONZE AGE SOUTHERN TRANS URALS

Derek Pitman and Roger Doonan

INTRODUCTION

Warfare and those who practice it have become increasingly popular themes of Bronze Age archaeology (Carmen and Harding 1999; Molloy 2007; Osgood, Monks and Toms 2000). In addition, the rise of warrior aristocracies and complex hierarchies are often seen as part of the '*Grand Narrative*' of the Bronze Age that, along with the production of metals and the construction of round barrow/kurgan cemeteries, is said to have appeared over much of Eurasia in the second and third millennium BC (Fokkens and Harding 2013; Kristiansen and Larsson 2005). However, it has also been argued that it is necessary to consider the Bronze Age from a more subregional perspective, examining local developments and relationships through a more community-centred approach (Brück and Fontijn 2013; Hanks 2009, Hanks and Doonan 2009). It is within this framework that this chapter aims to explore the concept of the warrior, how such identities might appear archaeologically, and to explore the character and variety of social relations that may gather around such individuals. It will draw on a case study from the Southern Ural region of Russia where, like much of Europe, warriors and warfare have become staple concepts in understanding the development of Bronze Age society.

BRONZE AGE WARRIORS

By definition, warriors are practitioners of violence who employ specialist martial weaponry and technique to either inflict violence or present the threat

of violence potentially existing on the edge of society (Harding 1999; Harrell 2010; Molloy 2008). Generally, they are considered specialists in that, in order to maintain the power associated with violence or its threat, access to the instruments of violence and the maintenance of the associated skills must be sustained (Kristiansen and Larsson 2005: 226). The Warrior has gathered such currency within European studies that it is routinely invoked as a powerful agent of either social change or a signifier of associated social development. The warrior in Bronze Age Europe is closely tied to the assertion and maintenance of chiefly power, yet such social categories were inherently present well before the demographic reached the so-called chiefdom levels (Hanks 2008; Kristiansen 1999; Kristiansen and Rowlands 1998: 128; Treherne 1995).

The traditional image is of a dominant, physically commanding individual of high social rank who has access to a range of elite goods which included a blade, either in the form of a sword or dagger; distance weapons, such as spears, javelins, bow and arrows and/or elaborate armour including helmets, shields and other prestige signifiers of wealth (Fig. 8.1, Kristiansen 1999; Whitley 2002). However, it is somewhat ironic that the 'warrior', the agent of violence, is only identified archaeologically in the grave; the one who supposedly inflicts death is himself signified to us only in death. It is then poignant to remember that while the archaeologist defines the warrior in death, it is in life and the dynamic practice of combat that warriors defined themselves.

Typically, the warrior figure is thought to be situated within a set of social relations that might be broadly understood as a vertical and linear hierarchy. In such social structures, the warrior exists as a violent specialist who is 'tenured' by a 'chief' and associated kin who may, as part of their composite

8.1: The image of the Bronze Age warrior, a composite of physical fitness, corporeal skill and material signifiers of wealth and violence. (Drawn by R. Potter.)

identity, exude warrior-ness while also being skilled in matters political and/or religious (Kristiansen 1999; Kristiansen and Larsson 2005; Whitley 2002). This, as Brück and Fontijn (2013) argue, is perhaps more born out of the post-Enlightened Western view of the 'idealised individual', detached from the world, rather than that of an embodied, constructed identity. Indeed, we contend here that while such vertical hierarchies have dominated many discussions and conceptualizations of the Bronze Age warrior, there remains only one possible scenario for understanding the maintenance of warrior identities. As such, wider conceptualization of the warrior identity and the precise nature of the social relations sustained by such individuals might be necessary to understand the diversity of societal configurations that extend across Eurasia. In other words, the identity and any given power of the warrior are constructed by the relationships that warriors maintain through specific actions and practices (Brück and Fontijn 2013).

LINKING CRAFT TO WARRIOR IDENTIFY

Archaeological approaches to dealing with this material inventory have taken such objects as the starting point in defining social identity (Kristiansen 1999) and, more recently, the manner in which such material culture is used in the physical engagement of combat (Carman and Harding 1999; Molloy 2008; 2009).

The finality of the consequences of violence has tended to focus the mind towards accounting for it in both absolute and simple terms. Violence can be terminal; the threat of such is equally seen to force specific actions amongst the dominated. The result is that violence, and its threat, has come to be seen as a determining force both in the maintenance of social hierarchies and, in contradiction to this, as a means of understanding social change (Harrell 2010). The role of the skilled body has figured little in such accounts, with most narratives instead looking to the development and production of specialized martial material culture; social change and stasis are simultaneously understood as the results of an ever-developing Bronze Age arms race. What is largely missing from such narratives, apart from the obvious development of corporeal skill (as is discussed by Molloy 2007; Peatfield 2007), is an understanding of how such individuals negotiate and structure social relations amongst their wider community.

It has long been acknowledged that 'warrior' individuals seem to have access to a range of martial, as well as prestige goods. Interestingly, recent evidence suggests that, in some instances, these individuals had privileged access to specific foodstuffs (Le Huray and Schutkowski 2005). This clear ability to access such goods has rarely been translated into a wider bearing on the nature of social relations. Therefore, it is the focus of this chapter to draw attention to

the relations that exist between warriors and the producers of the material culture through which they sustained their identity. Too often, the warrior has been disassociated from the agents of production, procurement and distribution who play such a central role in the construction of his or her identity.

It seems implicit that craft specialists are assumed to be subjugated under the threat of violence by a warrior elite whom they serve in a compliant manner. This may well have been an appropriate model in many instances, but we should note that it is only one possibility. The diversity of warrior representation, along with other identities represented in the archaeological record, should encourage us to scrutinize the network of relations that gather around their identities.

It can be argued that the objects of warfare, specifically their production, furnish both the outward manifestations of a warrior's identity and effect the application of violence through bodily skill. As Molloy has recently written 'as much as people make weapons, weapons make people' (Molloy 2012). So, while weaponry is functional, it is only so in the hands of people who have developed the skills to use it. Its very existence is equally contingent on those with the skills to produce it.

Weapons have either been considered as functional objects for violence or 'exaggerated symbols of power' (Osgood et al. 2000: 3) but without them, at least archaeologically, warriors would become largely invisible.

It is unsurprising that, in discussions of warfare and violence, weaponry is primarily studied in the context of its use and deposition, rather than in terms of production. The use of a weapon is a considerable aspect of its biography, but to ignore the object's production is to overlook the way in which a warrior is tied to his wider community. This is especially the case for metal artefacts because, unlike those made from stone – which can be crafted by a single hand – copper and bronze weapons are the product of numerous production steps which often require multiple skill sets. They also draw on diverse resources including tin, copper, ceramic and fuel which invariably rely on economic and political relations to secure access.

The production of bronze objects therefore extends beyond the warrior, relying on a range of individuals or groups skilled in metallurgy, mining, ceramic production, woodworking and the manipulation of other materials (Fig. 8.2). With many warrior graves containing a variety of forms of weapon, which include elements made from metal, stone and wood, the range of skills required to furnish a warrior with the necessary implements becomes ever wider.

Such a perspective serves to remind us that an agent of violence relies on a repertoire of objects – and a well-fed, skilled body – and as such the *chaîne opératoire* of the warrior is extraordinarily extensive. Therefore, the power marshalled by a warrior must be considered in the context of the relationship
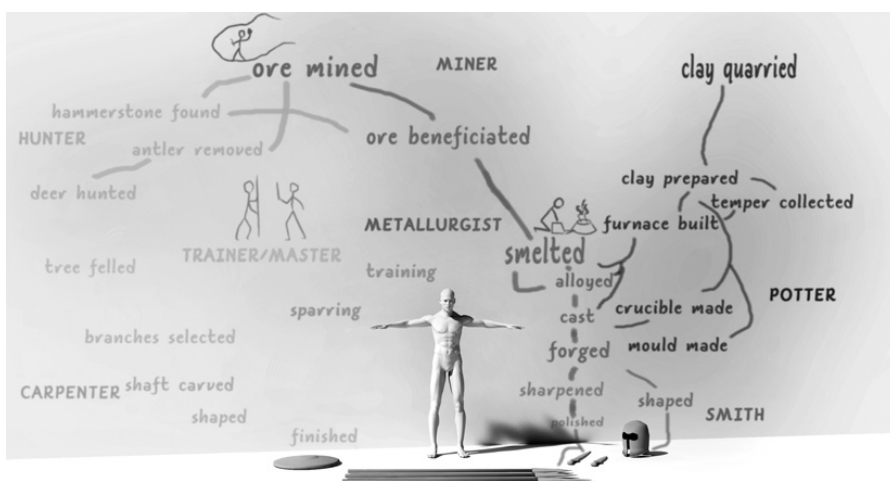
8.2: Some of the technical acts and social relationships that help to construct a Bronze Age warrior. (Adapted from drawing by R. Potter.)

with other aspects of the community. As Adams states: 'complexes, institutions, individuals and social groups do not "have" power intrinsically; rather it is created, aspired and negotiated through relationships with others' (Adams 2007: 194). With this in mind, it becomes crucial to explore the character of the relationship between warriors and craftspeople. In the classic view of the warrior aristocrat, control of production and, in turn, the ability to maintain the outward appearance of a warrior, firmly lies with the elite. While this may be true in some cases, it is not necessarily universal. The following case study may serve to highlight this point.

THE SINTASHTA COMPLEX

A number of archaeological features have become synonymous with the Sintashta complex, specifically enclosed settlements exhibiting highly planned interiors and in association with extensive kurgan cemeteries, along with a characteristic set of material culture (Gening, Zdanovich and Gening 1992; Koryakova and Epimakhov 2007). Much debate has centred on whether this evidence relates to a form of proto-state exerting control over a wide region and resources or more localized polities that were connected more by kin and cultural affiliations than by political structures (Hanks 2009; Zdanovich 2002). The emergence of closed, possibly defensive, settlements has been seen by some, including Anthony and Kuzmina, as indicative of a rise in warfare predicated by either increased environmental pressure or a rapid development in metallurgy and the need to control resources (Anthony 2009; Kuzmina 2008). Through such models of development, 'the warrior' has come to play a significant role; it is therefore appropriate to consider precisely what is
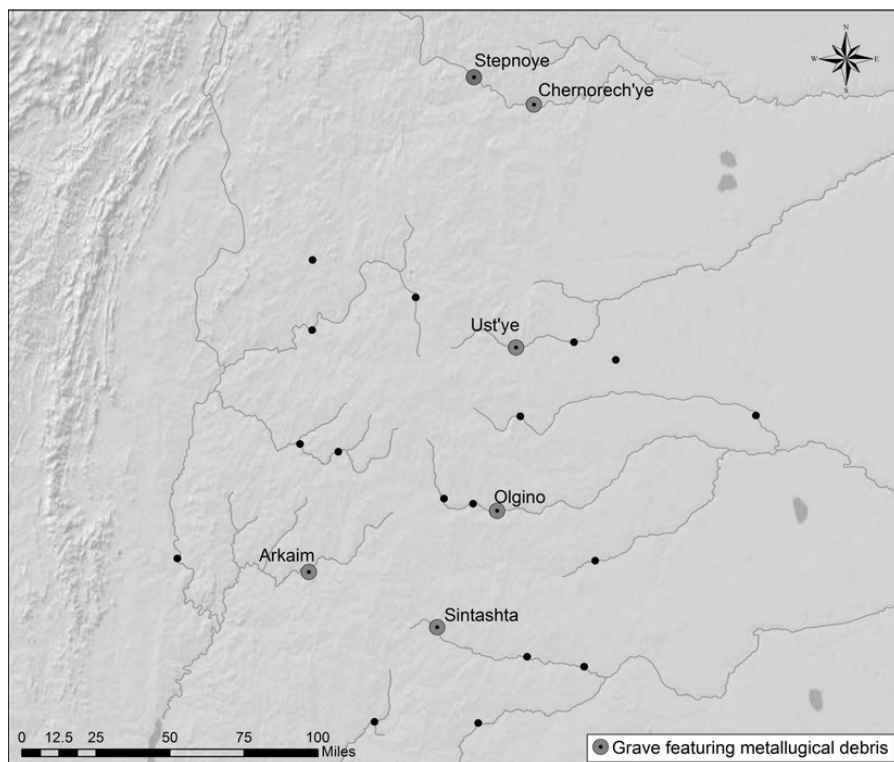
8.3: Location of the Sintashta settlements and the sites discussed in text.

understood by this term and to consider how the role of this bellicose character has been woven into narratives of social development during the Bronze Age.

The Sintashta region features twenty-three settlement sites, the majority with an associated kurgan cemetery complex (Fig. 8.3, Hanks 2009; Koryakova and Epimakhov 2007). Two of the most discussed aspects of Sintashta archaeology have been the seemingly ubiquitous spread of metallurgy throughout the settlements (and even within them) and the rise in specialized chariot warfare (Anthony 2009; Anthony and Vinogradov 1995). Archaeologists have linked these two themes in diverse ways. For example, Kuzmina has argued that it was the competition for ore resources that led to an intensification of violence and the development of fortified settlements (Kuzmina 2000). Conversely, Anthony (2009) has argued that it was environmental pressure which stimulated the rise in warfare and metallurgical production, causing the emergence of warrior charioteers who presumably had a role in marshalling the long-distance trade of metal goods.

The extent of metallurgy at Sintashta sites has been asserted in many publications (Anthony 2009; Grigor'yev 2002; Kohl 2007; Koryakova and Epimakhov 2007). This intensive metallurgical process has been closely related with the concept of an elite class, controlling production and working within

extensive trading networks which exerted control over hinterland populations, presumably through the mechanisms of the warrior elite (Kristiansen 1999; Zdanovich 1997).

EVIDENCE FOR WARFARE/WARRIOR ELITE

In a study of excavated cemetery sites, Epimarkov found that only 65 of the 242 interments studied contained weaponry, predominantly bronze knives/daggers, bronze or lithic projectile points and, in some cases, copper axes. Interestingly only seventy-nine of the individuals interments studied were adults, of which forty-three had weaponry. Biologically, only eleven of these individuals were identified as male, all of whom were associated with weaponry (Epimakhov 1996; 2002). So, nearly a quarter of these burials contained weapons in some form, most of which were placed with adults. However, it is the sixteen burials that contain spoke-wheeled chariots that have attracted attention as a possible warrior elite or even the emergence of warrior aristocracies.

Although some scholars have dismissed their functionality, Anthony has argued that these chariots were highly specialized and functional vehicles of warfare, developed during the Middle Bronze Age in response to an overall rise in conflict (Anthony 2009: 395). However, other than the chariots, there is little evidence for the existence of a special warrior class in the way that is found in Europe, particularly in terms of personal protection, which is largely invisible within grave goods inventories. The chariots, usually identified as staining in the soil, were often buried alongside multiple horses and complex horse tack (Epimakhov 1996; Gening et al. 1992).

In addition to the possible existence of chariot warriors, there is evidence of an increased climate of tension during the Middle Bronze Age. All of the excavated settlements have considerable bank-and-ditch enclosures that surround numerous dwellings that each contain access to water and storage (Gening et al. 1992; Zdanovich and Batanina 2007). Many of the excavated settlements were also systematically burnt at least once during their occupation; the absence of detailed settlement excavations does, however, make it difficult to quantify these events (Vinogradov 2013). But it is the chariot burials in particular that have captured the imaginations of international archaeologists.

CRAFT AND WARRIORS IN THE BRONZE AGE SOUTHERN URALS

Often found alongside these chariot burials, within either the same cemetery or sometimes the same kurgan, were burials that featured primary copper production waste, ore and tools. These burials, which many have interpreted as copper producers (Vinogradov 2003), have been identified at most of the published
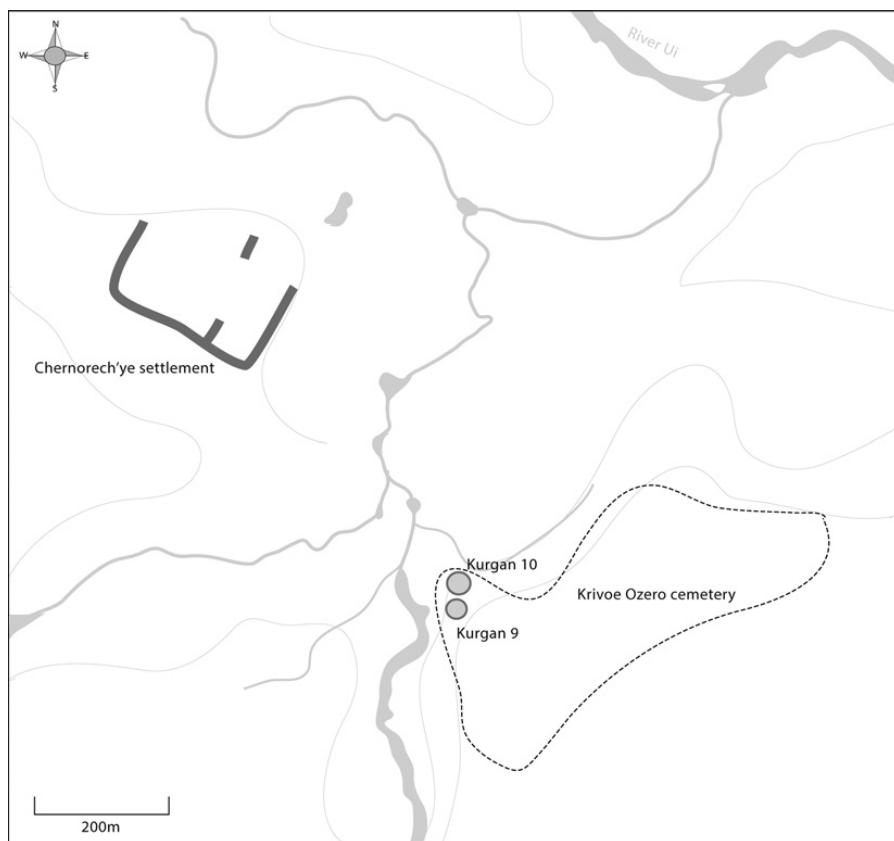
8.4: Plan showing the locations of Chernorech'ye and Krivye Ozero.

cemeteries dating to the Middle Bronze Age. The examples discussed in detail here were found at the cemeteries associated with settlement/enclosure sites of Chernorech'ye (Krivoye Ozero), Sintashta and Ust'ye (Solnste 2).

Krivoye Ozero

The Krivoye Ozero cemetery (located next to Chernorech'ye), featured at least twenty kurgans, six of which have been excavated (Fig. 8.4). The two examples (Kurgans 9 and 10) were located on a raised river promontory that is slightly disassociated from the main cluster and highlight the prominence afforded to both craftspeople and warriors at the site. Kurgan 10, pit 3, features the burial of an elderly male who was interred with copper ore, slag, charcoal and ochre along with a copper dagger, bracelets, ceramic vessels and animal bones. He had also suffered from a severe pituitary problem causing abnormal bone growth (acromegaly), most visibly an enlarged lower jaw (Rykushina 2003). This evidence has been understood as marking the individual as a metallurgist; however, even if this is not the case, it does at least highlight the importance

attached to the process of metal production itself. The individual in pit 3 was located on the periphery of a kurgan that yielded more than forty internment pits, twenty-six containing identifiable skeletal remains (Vinogradov 2003). Of these, seventeen were foetuses, newborns or less than one year old. The kurgan also included what is known as a 'face-to-face' burial, which featured a male and female lying on their sides facing each other; Kupriyanova suggests they were ritual specialists or part of a priestly class (Kupriyanova 2008). The central burials in the kurgan featured an elderly woman, buried with an extensively used double-edged knife, and a male buried with no weapons but accompanied by two later child burials.

In contrast, the neighbouring kurgan (kurgan 9) included only five individuals, four of which were adult and one juvenile. One of the two central burials, pit 1, included a twenty- to thirty-five–year-old female buried above an elderly (c. fifty years old) male who was accompanied by a chariot, two horse heads, bridle cheek pieces and a range of weapons (Vinogradov 2003: 108). The second of the central burials contained a forty-year-old female with bridle cheek pieces and numerous animal bones. The other adult grave, to the right of the plan, contained an eighteen- to nineteen–year-old male buried alongside a dagger and arrows. The final remains were that of a juvenile (suggested to be a girl) buried with a copper bead bracelet, animal bones and a ceramic vessel. G. Rykushina suggests that this individual died of a severe infection which resulted in severe skull trauma (Rykushina 2003). Both of these kurgans had been afforded a prominent place, spatially, within the cemetery and were of a similar size. Yet the aspects of the community that they represent could not be more different. One, kurgan 9, associated with a chiefly warrior class complete with an adornment of weapons and other tools of war, and the other, kurgan 10, associated with so-called ritual specialists and metallurgists. If it is accepted that a relationship in death is representative of a relationship in life, then at Krivoye Ozero ritual aspects of the community and craftspeople seem implicitly linked yet held in equal regard to charioteers.

Sintashta Cemetery

The cemetery at Sintashta features the so-called great kurgan, the 'SM' cemetery as well as three other peripheral kurgans (Fig. 8.5, Gening et al. 1992). In total sixty-six individual graves have been excavated, which included seven chariot burials (all in the SM cemetery) and what the excavators interpreted as a metallurgist (based on the presence of ceramic tuyéres, hammerstones and whetstones), located in the only kurgan to contain a single interment, kurgan 3. Unlike Krivoye Ozero, the 'face-to-face' burials, seen as ritual specialists, were all interred into the main SM cemetery along with the
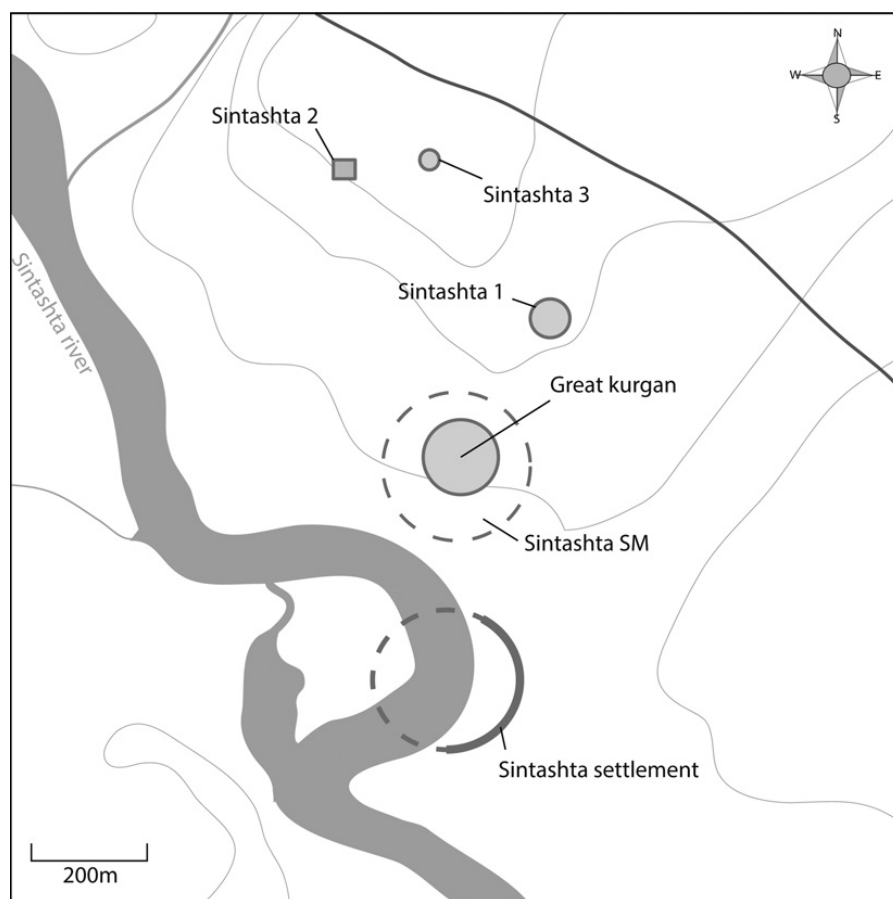
8.5: Plan showing the locations of Sintashta settlement and cemeteries.

charioteers. The SM cemetery contained significant evidence for feasting and animal sacrifice, and many have seen it as a ceremonial complex (Anthony 2009: 373).

The possible copper metallurgist burial was found about 300 metres to the north of the main cemetery and nearly 500 metres from the settlement. Although it only contained a single full interment, there were also the skulls and other long bones of at least four other individuals which the excavators noted had been 'cleaned of soft tissue' prior to inhumation (Gening et al. 1992).

This example stands in stark contrast to that of Krivoye Ozero because, at Sintashta, the so-called ritual specialists had a direct spatial relationship with the burials of warriors (and other members of the community) in death rather than with the metallurgist. Indeed, the metallurgist is completely isolated from the rest of the community, and although still buried in a comparably grand fashion, is completely disassociated from the other high-status burials.
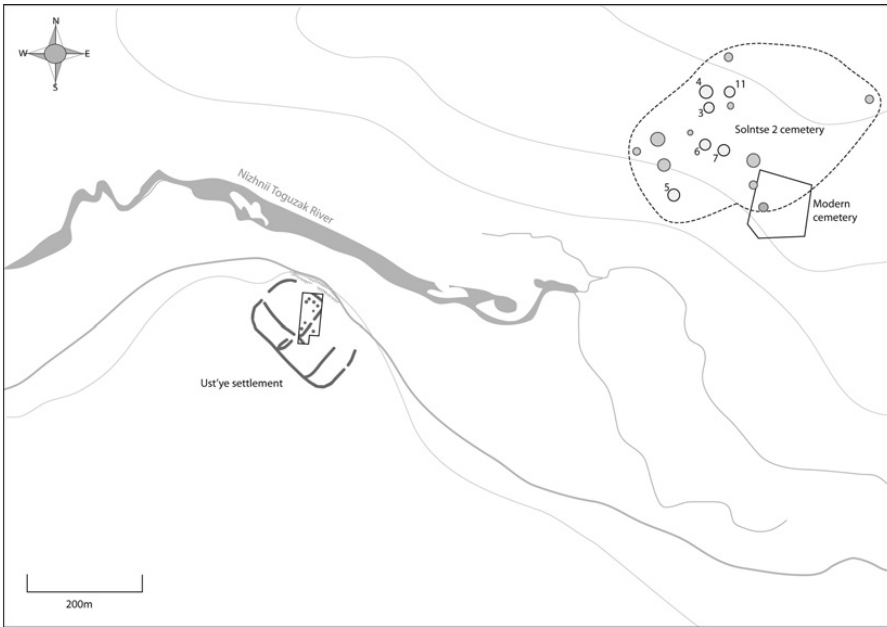
8.6: Plan showing the locations of Ust'ye and Solnte 2.

Solntse 2

The final example, Solntse 2, located across the river from the site of Ust'ye, contained about nineteen kurgans, of which six have been excavated to reveal a total of ten burial pits (Fig. 8.6, Bersenev, Epimakhov and Zdanovich 2011; Epimakhov 1996).

Three of the kurgans contained both chariot burials and evidence of copper metallurgy. Kurgan 4, to the north of the cemetery, contained two burials. The central pit contained a chariot and arrowheads with a small amount of copper ore. The second, more peripheral interment contained the burial of a young individual. The kurgan immediately to the east of this, kurgan 11, contained two burials, both near the centre, which contained a chariot and evidence for metallurgy in the form of slag, copper droplets, a pestle and a grinding stone along with stone arrowheads. The second burial, although poorly preserved, contained animal bones, bow ends and fishing hooks. The final grave to contain metallurgical debris was kurgan 5, to the south of the cemetery and nearest to the settlement, which contained two main burial pits. The central featured a chariot burial, but the second peripheral burial featured evidence for metallurgy in the form of copper slag and a tuyére.

Unlike those burials at Krivoye Ozero and Sintashta, evidence for metallurgy was found in direct association with chariot burials. While this might not suggest the existence of warrior metallurgists, it does suggest a close relationship between these two aspects of the community.
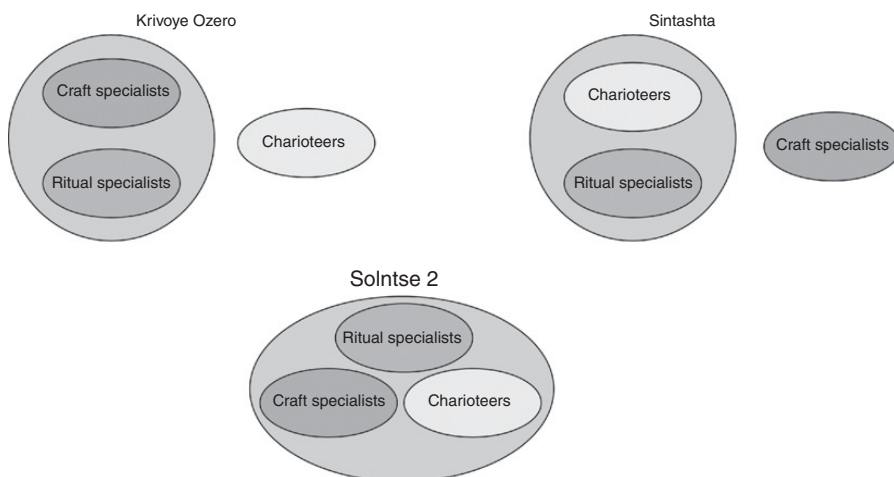
8.7: The varying relationships in death of the different aspects of the Sintastha communities discussed.

DISCUSSION

What is clear from these examples is that the relationship between copper metallurgists and warriors, in death at least, is by no means uniform at Sintashta-period sites (Fig. 8.7). While metallurgists seem to be afforded a similar level of status in death as those with weapons, their relationship to the community as a whole is different. At Sonlste 2, it is possible that the drivers of the chariots were directly involved in the metallurgical process or were closely linked (physically or symbolically) to those enacting the process. Of course, this relies on the assumption that those buried with metallurgical tools or debris were the practitioners of craft, but, even if this is not the case, the significance of metallurgical paraphernalia in death rituals cannot be ignored. This chapter has only touched on three aspects of the community; craft practitioners, warriors and those considered ritual specialists, and, although not exhaustive, these categories do represent a great many of the individuals identified in Middle Bronze Age kurgan cemeteries (Kupriyanova 2008, Hanks, Doonan, Pitman and Chechushkov 2015). It could be argued that the aspects of the community found in Sintashta-period graves are representative of a controlling elite. If this is the case, then the varying relationships in death could be indicative of different power/status relationships at the three sites, with access to important resources and violence marshalled in locally distinct ways.

While often considered as such, it is notable that warrior burials in the southern Urals are considerably more moderate than their later or European counterparts (cf. Kristiansen 1999), and, given the abundance of ore resources in the region and the obvious ability to smelt metal, the absence of accumulated material wealth needs to be accounted for. Beyond the presence of chariots, it

would be difficult to define warriors at all. So, if warriors did exist in the Middle Bronze Age southern Urals, then they did not command the ability to accumulate prestige metal goods as they did elsewhere; indeed metal weapons were predominantly made from only pure copper. When exotic alloys do begin to appear in burials at the end of the period, they were reserved for elaborate female adornment (Hanks et al., 2015).

So then, with such a small accumulation of metal wealth and the apparent significance of wooden chariots, the presence of metallurgical debris in such elaborate funerary settings could be considered out of place. However, it may have been the ability of metal producers to fashion carpentry tools – such as the flattened chisels which are often found in both burial and settlement contexts – which gave them such status, maybe simply as dexterous and skilled individuals who played a role in the construction of the vehicle which ultimately transported important people to death. So, in death at least, the relationship between charioteers, craftspeople and ritual specialists seems to be regionally distinct, but how this relates to the organization of production in the region is also significant because this may give insight into how the identity and power of the warriors was forged and mediated. Fieldwork and analysis carried out by the Sintashta Collaborative Archeological Research Project has also shown that production is practiced on a very local scale, with each settlement exploiting resources from its hinterland and with production centred in the settlements, albeit at an episodic scale (Hanks et al. 2015).

Therefore, if production and access to metalwork was controlled at such local levels, then it seems likely that power was also maintained at this level, with each community having access to copper producers and charioteers whose power was enfranchised by the wider community. The distribution of power within these communities therefore seems much more horizontal than the typical European model, with control shared, negotiated or competed for among different, interrelated groups (Fig. 8.8). The presence of craftspeople, charioteers and other individuals in similarly proportioned kurgan burials would suggest the lack of a single, dominant ruling class
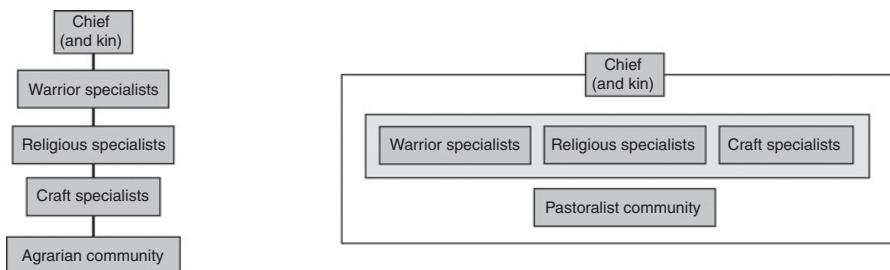
8.8: A hypothetical vertical hierarchy (*left*) compared to a horizontal, relational power structure (*right*).

because there is comparatively little accumulated wealth within these graves beyond that mentioned previously.

CONCLUSION

It is clear that the typical Europe model for complex hierarchies, with warrior figures playing a defining role, is inadequate in the context of the Middle Bronze Age southern Urals. Indeed, there are considerable differences between how groups subsist in Bronze Age Europe and the southern Urals. Hierarchies, such as those proposed for the region, are largely based on European models (see Kristiansen 1999). For example, the wider agrarian community in an archetypal European chiefdom is typically seen as sedentary, with crop-based agriculture playing a central role in subsistence, but much of the evidence in the southern Urals suggests a strong pastoral element to subsistence. A community whose wealth is manifest in livestock maintains a very different relationship to the wider landscape than one based on sowing grain (Shennan 2011). Control over resources and space would be vastly different when aspects of the community are relatively mobile and inhabit wide areas of the landscape. Such groups are much more likely to form horizontal control structures centred on contesting groups, where different aspects of the group sustain each other in a more mutually beneficial, perhaps more egalitarian, system (Pitman 2015).

It could also be the case that identities were far less structured: within such a varied annual cycle and expansive landscape, roles may have been more transient, with people adopting specific actions on a seasonal basis, perhaps as craftspeople during winter while acting in a more bellicose manner during the warmer season when herding may have extended far beyond the settlements. Indeed, there are parallels between the physical manifestations of violence and craft production, with the hammering of a blade mirroring the hacking of an axe and the precise act of handling a crucible mimicking the delicate parry of a sword. Therefore, many of the individuals could be considered to be warriors but only in that they were prepared, and equipped, to inflict violence but in a much less specialized manner, perhaps empowered on a familial or kin basis.

While there are hints of the accumulations of wealth, and perhaps the faint traces of an emergent warrior identity, there is, in the southern Urals at least, a complex interplay between those equipped for violence and the wider community. Therefore, the crafting of identity, in the grave and beyond, was a much more locally entangled affair. What is clear is that, rather than considering warriors or craftspeople as isolated social classes, it is vital to understand the complex relationships exiting between such groups and the wider community.

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CHAPTER NINE

CARP'S-TONGUE SWORDS AND THEIR USE: FUNCTIONAL, TECHNOLOGICAL AND MORPHOLOGICAL ASPECTS

Marc Gener

INTRODUCTION AND OBJECTIVES

This work is concerned with the identification of the morphological elements of carp's-tongue swords that are directly related with their use as weapons of war. It is an attempt to single out and parameterize the elements that determine the behaviour of these weapons in combat. Here, carp's-tongue swords are going to be used as a case of study but the methodology and underlying principles proposed could be applied, with the necessary adaptations, to all kind of swords and even to other hand-to-hand weapons. The hoard of carp's-tongue swords found in Puertollano (Ciudad Real, Spain) will be used as a case study.

When approaching the functional analysis of Bronze Age weapons (see, e.g., Molloy 2008, 2011 or Kristiansen 2002), as in all functional analyses of historical weapons, we try to understand the *action* that was executed through the study of the *object*, the *tool,* used to perform it. In an exercise of reverse-engineering, we examine the remains of the 'material solution' in order to determine what technical problem it was the answer to. These studies need to reach beyond the mere technical issues (Lemonnier 1986) and extend to the contextual influences (anthropological, cultural, social, etc.) if the choice of a particular solution for a given general problem is to be understood. It is easy to let these aspects make the discussion stray far beyond what the scope of this chapter intends to be, so this work aims to focus on the basic morphological

characteristics of the Late Bronze Age carp's-tongue swords and how they are connected with the actions these tools for violence were intended to perform.

SO, WHAT'S IN A SWORD?

To approach the question of identifying the morphological elements that become determinant in the use of a sword, it is necessary to take a small step back and look at the physical traits that constitute the object itself and define what makes a sword a sword.

We can start with a most concise definition of 'sword': 'a weapon with a long metal blade and a hilt with a hand guard, used for thrusting or striking and often worn as part of ceremonial dress' (Soanes and Stevenson 2008). This description provides us with a purpose ('weapon'), some physical traits ('a long metal blade and a hilt with a hand guard'), a function ('used for thrusting or striking') and the hint of an additional symbolic aspect ('often worn as part of ceremonial dress'). Let's expand on this.

A sword is a weapon, a tool for interpersonal violence, designed to attack nothing but another human being while defending from him or her. In this sense, it is worth pointing out that it is also an object not derived from a utility or hunting tool, like knives, spears, javelins, bows, and the like (Molloy 2007). It is not the objective of this work to discuss whether or not it was the first weapon exclusively designed for war (Bridgford 1997) nor to discuss its role as symbol (Bradley 2005, Fontjin 2005), but in this last regard, it cannot be denied that its significance derives directly from its intended task: to exert violence on another human being.

Then, back to the bare tool, one must start by wondering how the sword is designed to perform its function. In its basic aspects, a sword is composed of a blade with a point and one or two edges and a hilt at one end in order to hold it. Such a bare morphological definition is necessary because the varieties of swords are countless. The blade can be straight or curved, with one or two edges – although sometimes without – and can feature various sections and various lengths. The hilts can be with or without a guard, longer or shorter, simple or complex: the taxonomy of swords is wide and complex, and riddled with semantics, but all of them are classified as swords. The only other tool that shares the definition with swords is the dagger. What, then, is the difference between a sword and a dagger? The easiest answer is 'length', but this has historically led to a prolonged discussion about how long a blade must be before it stops being a long dagger and it starts being a short sword. An alternative is to abandon the 'length' factor in favour of trying to distinguish them for their use (Brandherm 2007: VIII), which may sometimes be a vague element to work with. That is why this chapter proposes a distinguishing functional element that can help in the differentiation between both kinds of objects: it is a sword when it is able to slash, it is a dagger when it is not. Now, let's expand on this.
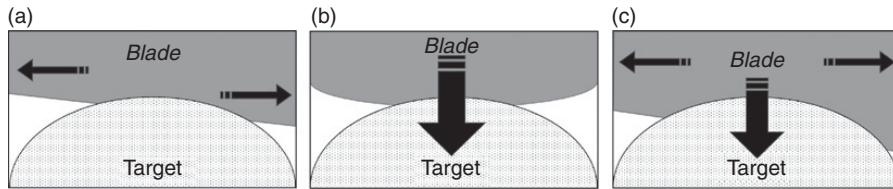
9.1: Schematic illustration of the three basic cutting actions: (a) slice, (b) chop, (c) slash.

Assuming that in both cases there is a hilt intended to be held with one hand and a point that provides thrusting capacity, the difference must be in the action of the edges. The edges perform the cutting action, but not all cutting is the same, nor is it performed equally. Simplifying, three different primary cutting motions can be described:

- *Slice:* a cutting action performed by applying the edge on the target and dragging it lengthwise. The greatest part[1] of the force is applied in a direction parallel to the surface with a pushing or pulling motion (Fig. 9.1a). An example of this type of action is the one performed by a butcher when cutting prime steaks from a sirloin.
- *Chop:* cutting action performed by applying the edge forcefully and quickly on the target. The force is applied in a direction perpendicular to the surface (Fig. 9.1b). An example of this type of action is the use of an axe when cutting wood.
- *Slash:* a cutting action performed by a combination of the two actions just described. The edge is thrown into the target with speed and force (chop) while being dragged at the same time along the wound (slice) (Fig. 9.1c).

For slashing, you need to be able to perform both a chop and a slice with a single motion. The morphological characteristic associated with the ability to perform an efficient slice is the *length of the edge*, which allows for a longer and deeper wound with a single pushing or pulling motion. For a chop, the morphological characteristic associated with the action is *momentum*, which is a physical quantity obtained by multiplying the mass of an object and the velocity at which it moves. Thus, the heavier the object and the faster it moves, the stronger the chop. Of course, this is a gross simplification because the mechanics of the generation of momentum for a hilted blade are complex. Some of the parameters involved in the motion of the sword have indeed been subject of modelling attempts (Denny 2006; Turner 2002) but so far they normally focus on partial aspects of the problem. Undoubtedly, trying to reduce this problem of dynamics to numbers is an interesting challenge, but it is also beyond the scope of this chapter. Instead, we will focus on key concepts in order to not distract from the analysis that is presented here.

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[1] Some force is applied perpendicularly to the surface in order to maintain the contact between the edge and the target, maintaining the slicing action as long as the edge is in motion.

Going back to the execution of the slashing motion, both a long edge for the slice and momentum for the chop are required to perform it. Momentum of the blade is generated with various mechanisms, but the most important one is rotation. When used for striking, a sword rotates around various points located on the body of the user; for the sake of simplicity, we are going to focus in the most important one: the hand (wrist and fingers). To generate a good amount of momentum with a weapon held in our hand, we need it to have a specific distribution of mass which must concentrate away from the hilt. This generates momentum even with a short motion. This is why axes or maces have their weight strongly concentrated on the point furthest from the hand in order to generate as much momentum as possible with the least effort, and this is also why they are essentially chopping (and crushing) weapons/tools. With such a capacity for generating momentum, if we have a short edge, as in the case of the axe, it is not possible to drag it efficiently for slicing, so we are reduced to chopping. With a long edge, it is possible to push and pull upon impact, creating an effective wound on the target without having to depend on the intensity of the impact alone: a slash. This means that the weapon in question is a sword.

If we apply this analysis to the dagger, we will see that, because of its mass distribution (close to the hilt), it cannot generate enough momentum to slash. It can thrust and slice, but that is it. This is how we can tell the difference between a dagger and a sword – because of the way it is used. Blade length is important because the longer the blade, the more mass there is positioned away from the hilt and therefore the more leverage that can be applied to accelerate it and give it speed. But this doesn't tell the whole story: it is how the mass is distributed along that length which is really defining. That is why it is important to record things like the thickness and width of a blade when measuring it to be able to gauge its mass distribution. Weight is also crucial, and sometimes it may be convenient to record the point of balance (or centre of gravity), which will also help in giving a reader without actual access to the sword an additional datum to gauge the distribution of mass. Additionally, when measured from complete swords (with a whole blade and a full hilt featuring all its elements), the point of balance is a parameter that gives information about the sword's possible performance.

With this functional analysis of the mechanics of the cut, we have seen that a dagger can thrust and slice; an axe can chop; maces can crush; halberds can thrust and chop; but a sword can cut, thrust, chop and slash. As a weapon, a specialized tool made for a very specific purpose, it is deliberately very versatile. Although there are many complex factors (length, mass distribution, leverage, etc.) involved in giving a sword the ability to perform a slash, it is this ability that gives the sword–wielder the capacity to save his strength while keeping control of the sword and instead using his energy to deliver a powerful hit and produce a wound. Being in control of the weapon, it is then the wielder who decides what to do in every instant instead of having to follow what the

tool dictates in order to be effective. It is here that versatility gives access to multiple choices. Now the sword-wielders can perform different actions depending on the situation, providing them with more solutions to solve an immediate problem. It gives its user options, and it is the design of the sword that tells us that the wielder wants to have these options.

All of this draws a clear picture about the use of swords: it is not simple. They may be used in a simple fashion, of course, as if they were metal clubs or light axes, but this is not what they were made for. They were made to be used with an elaborate technique. It is here that fencing comes into play.

ANALYSIS OF THE FUNCTIONAL ELEMENTS OF THE SWORD

The major features of a carp's-tongue sword (Fig. 9.2) will be analysed from the point of view of its functionality in this section.

A sword is a weapon that is offensive and defensive at the same time. The elements related to its offensive aspect are those with a capacity to cause harm: the point and the edges (see Table 9.1). Of course, other features like the guard or the pommel can be harmful when used to strike a vulnerable part of the opponent, like the face, but the difference is that while these elements are offensive if necessary, their primary function lies elsewhere.

The elements related to defence are those with the capacity to provide control, both on the wielded weapon and on the adversary's: the blade as

TABLE 9.1: *Summary of the relationship between the morphological elements of the carp's-tongue sword and their function.*

Attribute	Function	Elements
Offence	Cause harm	Point edges
Defence	Provide control	Blade
		Guard
		Ricasso
		Pommel
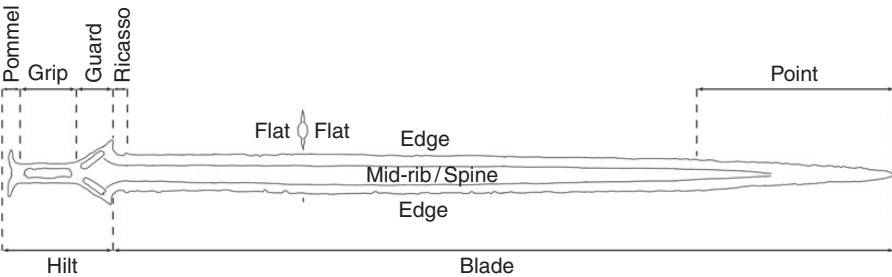
9.2: Morphological elements of the carp's-tongue sword. (Drawing of the sword after Brandherm 2007, Lam. 18, no. 92.)

a whole, the guard, the ricasso (the unsharpened part of the blade near the hilt) and the pommel (see Table 9.1). It must be emphasized that defence is not only related to the capacity to parry. Parrying, in swordplay, is when a weapon is used to completely stop the motion of the antagonist's. Defence is all about the ability to control the rival, and parrying is just one of the ways the fencer can use to control the opponent's blade. And it is a poor one at that because it rarely provides an opportunity to follow through with another action, not to mention that it is potentially harmful to one's own weapon because it absorbs all of the momentum of the adversary's sword. A parry is the last resource for defence; it is done when there is no other option and the opponent's blade must be stopped at all cost. It happens in combat, of course, and the sword is prepared to withstand it if it is reasonably well built, but it is hardly optimal.

Morphologically, the sword can first be divided into two primary elements: the blade and the hilt. Each of them has different features that are associated with a distinctive purpose. Their variations are particular to each type of sword, but we are going to apply this analysis to the carp's-tongue sword.

Blade: the blade of the carp's-tongue sword can be described as long, wide, thin, ribbed and pointy. Each of these traits is connected with a specific functionality.

- 'Long': from a functional point of view, length is directly related to reach. A long blade is technologically more complex than a short one because it is mechanically more demanding (Denny 2006; Turner 2002). It is also harder to keep in controlled motion because of its mass distribution, which taxes the wielder's muscles. Despite this, the morphology of swords leans towards longer blades. We have already seen that the contribution of length to their slashing capacity is a defining feature, but there are still long and short swords, so any length beyond the minimum to provide a proper mass distribution for slashing must be related to something else: reach – a defensive feature. Having more reach provides more control because it allows more time for the wielder to react. The farther away the opponents are when entering into the wielders' reach with their weapons, the more time it is going to take them to access the wielders and, therefore, the more time the wielders have to react to any action from their rivals. In short, reach means time to react, and time to react means capacity to defend. Sometimes, defence means neutralizing the opponent as soon as possible, but here offence is a means, not the goal. The final goal is always to keep oneself alive.
- 'Wide': the width of the blade is related to its ability to cut. A wide blade provides room to drive the edge deep into a cut. Cuts are good for disabling opponents. Killing an adversary is not always the best way to deal with him, especially because killing humans is notoriously difficult in combat when they tend to protect their more vital parts both with armour and fighting technique. The true priority is to render them harmless (Amberger 1998). Being able to cut

the muscles and tendons of arms and legs is a very effective way to neutralize an opponent, efficiently dealing with the immediate threat.

- 'Thin': the thickness of the blade at the edge is a measure of how sharp it can be. A thin edge with relatively parallel faces is more fragile, but also easier to sharpen and to penetrate a target when cutting.
- 'Ribbed': the mid-rib at the centre adds rigidity to the whole blade. This is related to two main functions:

    Thrust: the mid-rib and the added rigidity it provides helps in the transmission of force from the hand to the point in the thrusting action, thus aiding penetration. It also makes the blade more difficult to bend towards the flat under stress; for example, when the thrust is not performed perfectly square. These factors become more critical when trying to penetrate any kind of armour.

    Cut: the mid-rib helps supporting the edges, allowing them to be thinner. For example, an alternative solution to provide rigidity would be to have a blade with a lenticular or diamond section, but this would mean that the edges would be thicker – stronger, but with less ease of penetration. The choice for this design in the carp's-tongue swords points to a preference for softer targets to be cut, thus demonstrating a tendency towards slicing instead of chopping.

    It must be mentioned that the functional aspects of the mid-rib are inextricably tied to the structural function of this feature. Because of the mechanical characteristics of the metal, some kind of reinforcement is needed in the blade to allow it to reach a certain length. Ribbing, or some kind of longitudinal thickening in the blade, is necessary to create a long bronze blade which is able to be used to fight with a degree of efficiency. So, it is a feature that, to a higher or lower degree, is always expected to be found in any bronze blade of some length. It is how it is implemented in each particular case that requires a finer analysis.

- 'Pointy': the point, of course, is related to the thrust. In the case of the carp's-tongue swords, the point itself is narrow and thick. This means that it can't be particularly sharp but that is stiff and solid. A point able to cut allows the wielder to perform cutting techniques at the distance of the limit of the sword's reach, but, in this design, it is instead forfeit in favour of giving the sword a better efficiency in thrusts against hard and rigid targets, like armour-wearing opponents, to the detriment of its cutting abilities, which are more efficient against unarmoured targets.

So, after all this analysis, there are some things that can be said about the blade of a carp's-tongue sword. It has a good reach, which allows for a wider degree of defensive techniques. It can cut easily and deeply, performing efficiently against unarmoured or lightly armoured targets. It also has a good thrusting capacity, making it able to deal with mildly armoured targets. It must be pointed out that, of course, an opponent can display unprotected, lightly armoured and mid- or heavily armoured targets at the same time. Knowledge of how the blade performs

in each case allows the sword-wielder to make decisions about what actions should be taken against each target that presents itself (regarding the performance of some bronze swords against different types of targets, see Molloy 2008).

Of course, all of these features have to be kept between realistic values when implemented because the mass of the sword must be kept below a certain amount lest it becomes unwieldy. In the end, each design wants to reach an equilibrium, and it does so by reinforcing some points and weakening some others. Which points are reinforced, which ones are weakened in turn, and to what degree all this is done is what gives us information about the intentions of the technological decisions taken.

- *Hilt*: The hilt of the carp's-tongue sword has a variety of elements related to functionalities that go far beyond providing a place for holding the weapon. When moved around and used for cutting, a sword behaves like a lever. The blade is the long arm of the lever which is manipulated through the short arm: the hilt. The fulcrum is what separates both arms, changing its position according to the action but, in a first approximation, being chiefly provided by the hand. The hand uses the different elements of the hilt to change the position of said fulcrum and to apply the right leverage, following what the circumstances demand at every moment. Thus, a short motion of the short lever arm becomes a long motion of the long lever arm. This is how it becomes possible to move a sword around in relatively wide arcs just with short motions involving the elbow, the wrist and the fingers; these are elements of the body that never stop moving quickly and continuously throughout the process of swordplay.

Still, in a first approximation, there are mainly four different fulcrums around which the sword is made to pivot through manipulation with the hand. They are located at the wrist (Fig. 9.3a), at the little finger (Fig. 9.3b), at the index finger (Fig. 9.3c) and at the web between it and the thumb (Fig. 9.3d). Usually, all the motions used to manoeuvre the sword around are a combination of two or more of them. All except that from the wrist are put to work using different elements of the hilt that also have other functions.

- *Pommel*: The pommel provides the counterweight of the blade. The point of balance of a sword must lie in the blade, in front of the guard, but if it is located too far from the guard and down the blade, the sword becomes tip-heavy and difficult to manoeuvre. There is always much more mass in the blade than in the hilt, so a pommel is added at a location opposite of the blade to provide a counterweight and bring the point of balance as close to the guard as desired. Again, an equilibrium must be reached: a heavy blade requires a heavy pommel to balance and, if this process is taken too far, the sword may end up being too heavy to wield altogether. The position of the point of balance gives us an idea of the intended use of the sword. If it is further down the blade, the sword leans
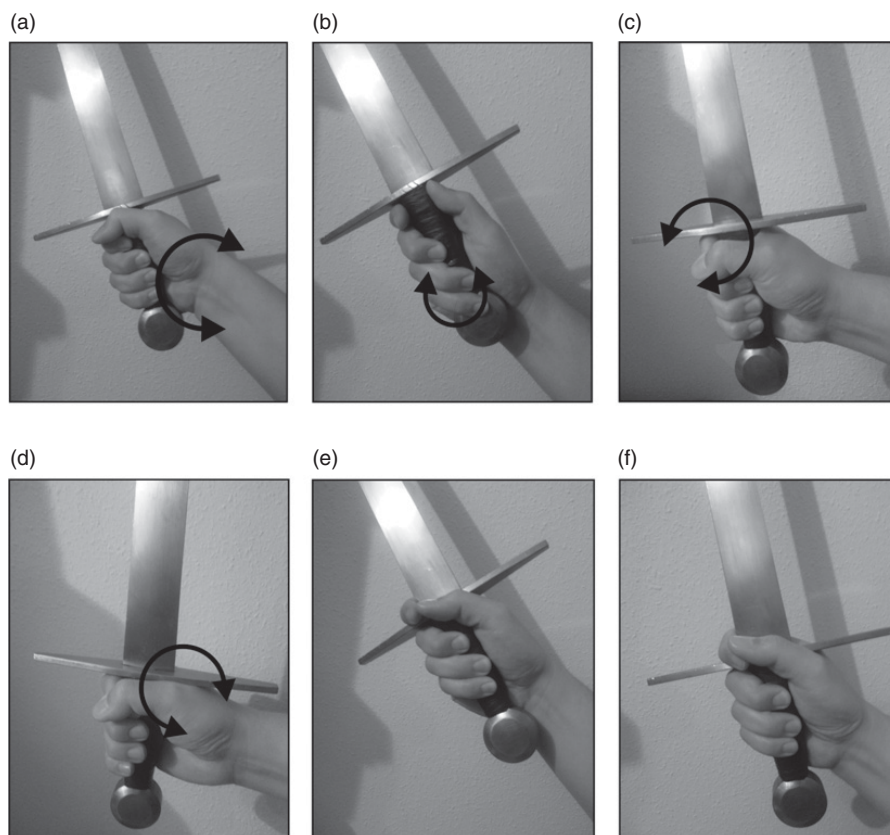
9.3: Examples of how a sword is manoeuvred with the hand and the related fulcrums: (a) wrist fulcrum, (b) little finger or pommel fulcrum; (c) index finger or front-guard fulcrum; (d) rear-guard fulcrum; (e) index finger above the guard, alignment of the blade with the forearm; (f) index finger above the guard, alternative gripping. (Photographs by Marc Gener.)

towards cutting strongly (a tendency towards 'chopping', if you like) and thrusting powerfully. If located closer to the guard, the sword feels more agile and responsive to short motions in the hilt. The weight of the pommel is chosen according to this intention. As already mentioned, it must be stressed that all of these details about mass distribution give information about what the sword is intended to be used for, but they cannot be gauged without having all the elements that provide mass in their place.

The pommel also prevents the sword from slipping from the hand due to the force generated in the rotating motion. It also acts as an aid to stop circular motions of the blade by making it press against the thenar eminence (part of the palm of the hand located at the base of the thumb) or the heel of the palm. It also provides support for one of the fulcrums generated in the hand, the one that articulates around the little finger (Fig. 9.3b), which is also known as the 'pommel fulcrum'. This fulcrum is used in some actions including changes of direction or aligning the sword with the forearm for some types of thrust.

Aligning the blade with the arm provides a better transmission of the force generated by the body to the point, thus allowing for a more efficient thrust.

- *Grip*: The grip is the short arm of the lever. This is where the force is applied by the fingers or the thenar eminence to make the blade move in one direction or another. A small pressure applied by the little and annular fingers can move the point of the blade in a wide arc.

- *Guard/ricasso ensemble*: In the carp's-tongue swords, the guard is composed by a widening of the grip that then decreases progressively in width, forming the ricasso (unsharpened part of the blade at its base) until it merges with the blade itself, sometimes with a step at that point. Given this configuration, it is easier in this case to speak of a guard/ricasso ensemble because both elements are very intimately combined.

- *Guard*: The guard prevents slipping of the hand up to the blade in a thrust, but its primary function is to protect the fingers and provide a platform for defensive control. When the blade is used to intercept an incoming blow, it meets the opponent's sword and makes it slide down its own length in a controlled fashion to the guard, where it stops harmlessly. The opponent's blade is then close to our hand, where it has no leverage advantage over the wielder and is therefore under our control. It is much more efficient than parrying. This is an action with a lot of particular applications and quite a bit of descriptive complexity; it is here described it in a very simplified way. The guard also provides support for two more of the fulcrums generated in the hand: the one that articulates around the index finger and the one around the web between it and the thumb (that we can also call the 'front-guard fulcrum' and 'rear-guard fulcrum', see Figs. 9.3c and 9.3d). These are the main fulcrums used to move the blade around by using the grip as the short arm of the lever, pushing and pulling it with the fingers and the thenar eminence. Sometimes, the index finger can also be put above the guard and in contact with the unsharpened edge of the ricasso as an alternative hold. It provides assistance in aligning the blade with the arm, and it can add support and strength for a motion around the fulcrums located there by using the guard as a transversal lever (Figs. 9.3e and 9.3f).

- *Ricasso*: The ricasso provides control over the edges through the use of the thumb by putting it on the flat and allowing the sword to be held with the edges aligned in a left–right direction (Fig. 9.4a) instead of the usual front–back (Fig. 9.3). The width of the ricasso also allows the thumb to be put on the sides to provide a bit of lateral leverage that facilitates the alignment of the edges (Figs. 9.4b–e).

Both edges of a double-edged sword are used in combat. The primary (or 'true') edge is the one facing the same direction as the fingers of the hand wielding the sword. The secondary (or 'false') edge is the other one, and it is regularly used in manoeuvres involving the use of the thumb in the ricasso, which allows it be to put into play. Some of these actions are illustrated in Figs. 9.4f–h.
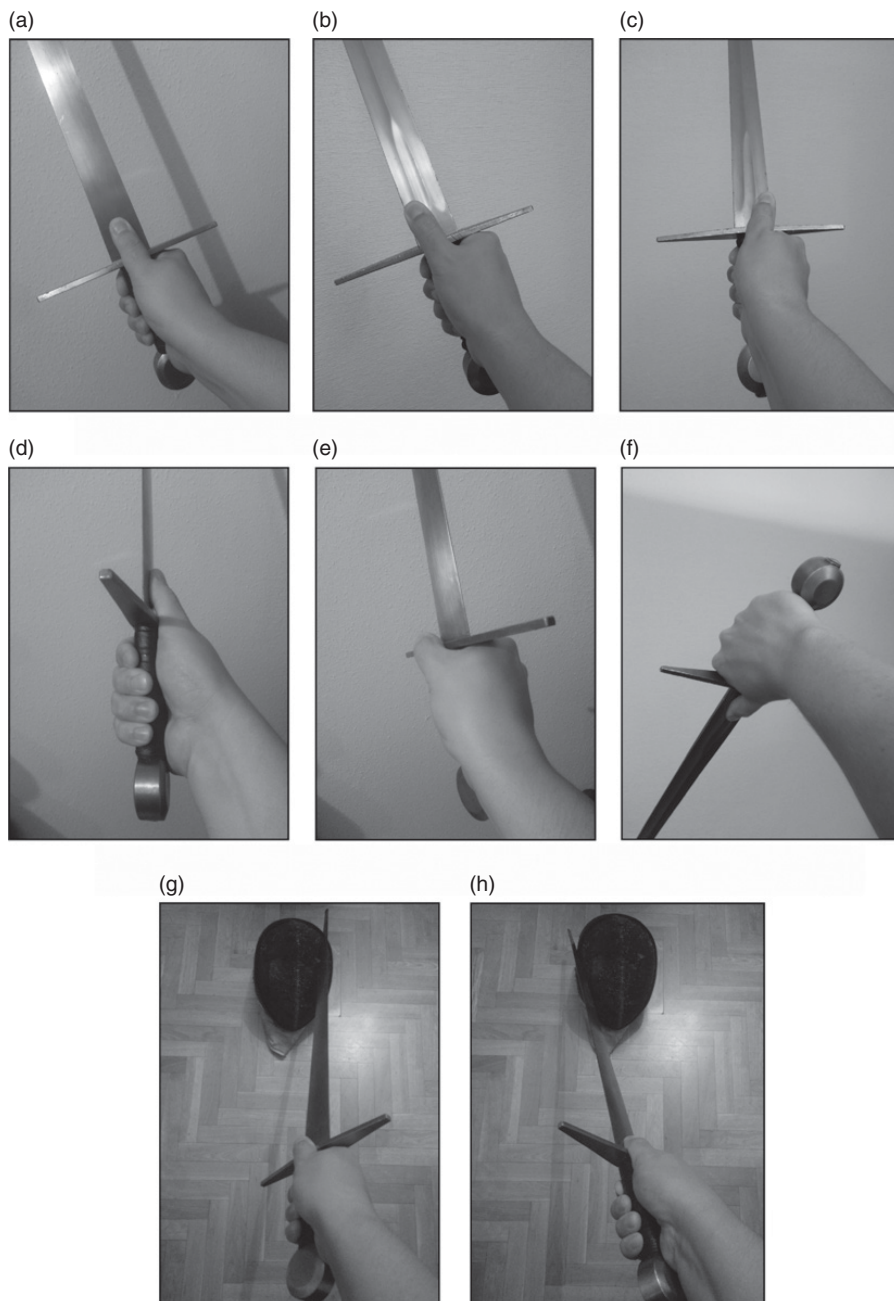
9.4: Examples of the use of the sword with the thumb on the ricasso: (a) basic hold, edges aligned in the left (primary edge) – right (secondary edge) direction; (b) position of the thumb to assist in the aligning of the primary edge; (c) position of the thumb to assist in the aligning of the secondary edge; (d) alignment of the secondary edge; (e) alignment of the primary edge; (f) example of how the thumb is used to support the blade when hitting with the primary edge in a horizontal cut with a raised hand to the right side of the head of the opponent; (g) example of a diagonal descendent cut to the left side of the opponent's head with the primary edge; (h) example of a diagonal descendent cut to the right side of the opponent's head with the secondary edge. (Photographs by Marc Gener.)

The width of the ricasso, combined with its thickness, is also a structural feature. When a cut is performed, no matter if it connects or not, there is a lot of stress generated at this spot. It is one of the primary points of breakage for these swords. Making it wider and thicker reinforces a potentially weak point.

To summarize, the core and essence of a sword is composed of its blade, designed for cutting and thrusting, with a hilt at one of its ends whose purpose is not only to allow the blade to be held, but also to put it into play efficiently. It is a weapon with a great capacity for offence, but its use is conceptually defensive because it is used to control the enemy's weapon so that it cannot harm the wielder and to disable the opponent effectively.

APPLYING THE ANALYSIS

In the previous section, the essential morphological elements that define the use of a carp's-tongue sword were highlighted and their characteristics were analysed. This kind of functional analysis can be performed on any sword (or other weapon) in order to try to elucidate how it was used, thereby providing useful hints when approaching comparative analysis. Having a good idea of how the sword was designed to be used gives a lot of information about what this tool was expected to face and what problems it was expected to solve. It says, for example, whether it was a versatile or specialized weapon, with the complexity or lack thereof in military organization that this implies; what kind of armour it was expected to defeat; and what individual and collective tactics it was supposed to fit, along with the extent of the knowledge the maker had about the possibilities of the material it was made of. In short, it provides questions. Questions help in building hypothesis and give clues about what else to look for in the archaeological record. Of course, this analysis means nothing to the archaeological study if it is not complemented with information about technology, society, culture and the like, but, when integrated with all the relevant data, it is quite useful. For example, it can help elucidating when typological variations between a family of swords are due to differences in use or to other, let's call them 'cultural' (tradition, external influences, aesthetics, technology, rituals, etc.), reasons.

In this sense, let's compare two variants of the carp's-tongue sword family: the Ría de Huelva type (Fig. 9.5a) and the Monte Sa Idda type (Fig. 9.5b). One of the most evident morphological differences between both types is the shape of the ricasso. In the Huelva type it narrows progressively from the guard to the blade, while in the Monte Sa Idda type the narrowing is abrupt and more pronounced, and it widens again, forming a step to meet the base of the blade. In this Huelva type example there is also a thickening in the centre of the ricasso, coming from the guard, which forms the base of the blade's central rib.
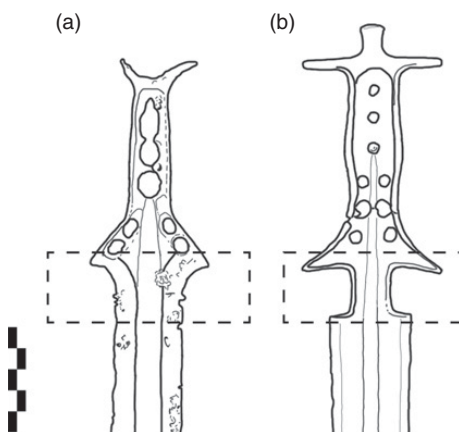
9.5: Hilts of carp's-tongue swords, with the ricasso area marked with dashed rectangles: (a) Huelva type, (b) Monte Sa Idda type. (Drawings of the swords after Brandherm and Moskal del Hoyo 2010.)

For the Monte Sa Idda type example, the rib is much narrower and apparently thinner, and it also has flanges on the edges of the ricasso. From a morphological point of view, the two ricassos are quite different, but from a functional point of view, they seem to be quite similar. Not considering, for the sake of this exercise, the possible shape of the parts now missing from the hilt, both ricassos provide room to hook the index finger around the guard and use it for leverage: both are wide enough to provide support for the thumb to assist with the orientation of the edges, maybe a little less in the case of the Monte Sa Idda example, but still enough. In addition, in this last case, the thumb is probably able to reach the base of the blade and rest there. Both are also reinforced in this stress point for the sword – the Huelva type by a considerable thickening, and the Monte Sa Idda type by the rib, but especially by the lateral flanges, which provide good strengthening. In short, they both have a ricasso that fulfils all its intended functions for combat and also satisfies its structural purpose. Therefore, regarding the elements analysed, both swords would be used in the same way. None of these variations shows a real technological or functional improvement in front of the other. They are two different ways to solve the same technical and functional problems, but neither can be considered significantly better[2] than the other. So, their morphological variations do not answer to a difference in use or to a structural improvement, but to other reasons that must be found in the cultural context.

Another illustrative example is the case of the swords from the Puertollano hoard. The whole archaeological find, excavated at Camino de Santiago, Puertollano (Ciudad Real, Spain), consisted of fourteen swords and daggers,

[2] For a discussion on how 'quality' can be considered in this context, see Gener 2011.

(a)   (b)
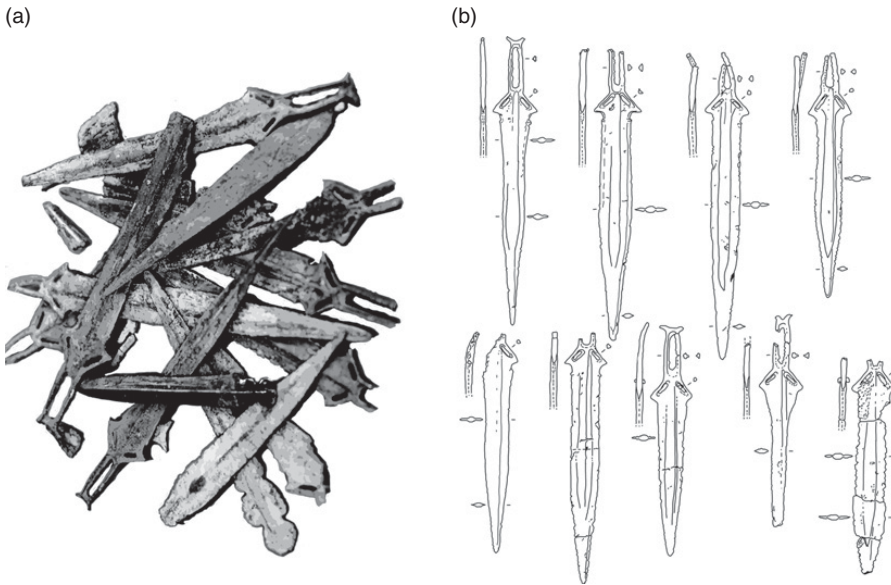
9.6: The Puertollano hoard: (a) picture of the metallic objects (after Montero et al. 2002), (b) a selection of the swords. (Drawings after Brandherm 2007, Lam. 24 and 25.)

one fragment of a spear butt, two fragments of sword hilts and one fragment of a small rod, all of them of bronze and from a Late Bronze Age chronology (Fig. 9.6a), as well as some ceramic fragments and lithic industry that belonged to an earlier period (for more details on the deposit, its contents and its circumstances, see Fernández Rodríguez and Rodríguez de la Esperanza Manterola 2002; Montero et al. 2002 and Rovira 2004). This hoard has various noteworthy characteristics (technological, depositional, etc.), but the one we want to use for this example is the morphology of the majority of the swords: they are of the carp's-tongue type, with all of the right characteristics, only significantly shorter. A selection of them can be seen in Fig. 9.6b, where we can confirm that they are not regular carp's-tongue swords with their blades cut down because they have no disruptions along their length (the essential measurements for them can be found in Montero et al. 2002). They barely allow us to extrapolate conclusions about their mass distribution because not all the necessary measurements to gauge it have been recorded and many of them are also incomplete, but it is reasonable to presume that they indeed have a mass distribution compatible with slashing, and, consequently, their use as swords. The remaining elements are already there, so it can be said that they are fully functional carp's-tongue swords with the added particularity of having been made with a considerably shorter blade than other contemporary examples. At this point, it must be said that there are no answers to the singularity of the Puertollano hoard presented here. This would need a deeper study and access to a lot of fundamental data that are now lacking (thickness of the mid-rib, for

example, and how it varies along the blade), but it still offers a very useful opportunity to illustrate how the analysis described earlier can be applied to a practical case. We might not have all the information that could be obtained from the swords, but we have enough to start asking questions and making hypotheses. For example, is the shortness of the blade a consequence of the maker's limited technical knowledge? Casting long bronze items is no easy task. The first thing would be to approach the technical aspect, looking for comparable objects that would give clues as to whether those who made these items were in fact technically able to produce them with longer blades. If we find that there is no technical limitation, it must be concluded that their length was intentional. Is this intent related to its use as a weapon? A shorter blade means less reach and, consequently, less defensive capacity. One would then expect this sword to be paired with a shield, maybe a relatively big one to compensate for the lack of defensive capability[3], or with some armour. It cannot slash as well as a longer sword, but a shorter one is also less prone to bending when used to thrust. In general, thrusts are more effective than cuts against armour. Therefore, if these swords are thick enough in the mid-rib to support the stress of thrusting, the possibility of this design being an adaptation to fight at least lightly armoured opponents is something to consider. Short swords are also fit to fight collectively in a formation because there is less risk of injuring an ally when swinging them around, so this is another track to follow.

In the end, what is important for these objects is that they are part of the same cultural complex as other carp's-tongue swords from the same period in the Iberian Peninsula and beyond but, at the same time, that they also feature morphological differences that we can now recognize as directly linked to a different way of using them. Same culture, different practice. Acknowledging this fact leads to technological, social and cultural implications that can then be explored. Ultimately, this is what can be expected from this kind of functional analysis of the ancient tools for combat: that it raises questions and, at the same time, provides pointers to research them and data to answer them. It helps expand our analytical capacity, linking the material object with technological, functional, military, social and cultural aspects, and from there to trade, external influence and exchange. In short, a much broader context.

CONCLUSION

In this work, it has been determined that carp's-tongue swords are instruments designed to be used for combat, and, more importantly, it has been justified why.

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[3] Shields are very influential in the dynamics of swordsmanship, but an analysis of their role in this context is far beyond the scope of this chapter. For a discussion on their use in Bronze Age combat, see Molloy 2009 and Uckelmann 2011.

It has been described how the capacity to slash is the key feature to tell a sword from a dagger and that this capacity is directly related to the sword's mass distribution.

Some morphological features of the carp's-tongue swords have been pointed out as directly related to their use as weapons: they can be summarized as blade length, blade shape (width, profile, thickness, etc.) and hilt configuration (pommel, grip, guard/ricasso conformation, etc.).

Variations of these features may indicate variations of use. Variations that don't imply a technological improvement or a change of use are a product of the cultural context.

Identifying these features and analysing them to understand how they affect performance allows us to determine if a specific typological change is caused by a change in the cultural context, in the technological framework or in the martial (functional) aspect. This gives us a powerful tool to expand our ability to connect the object with its context and better understand the environment that produced it.

FINAL NOTE

The author understands that it would have been better to use an actual carp's-tongue sword for more clarity in Figures 9.3 and 9.4, not to mention chronological consistence, but it was not possible and apologizes for that.

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CHAPTER TEN

WARFARE OR SACRIFICE? ARCHAEOLOGICAL RESEARCH ON THE BRONZE AGE SITE IN THE TOLLENSE VALLEY, NORTHEAST GERMANY

Gundula Lidke, Ute Brinker, Detlef Jantzen, Anne Dombrowsky, Jana Dräger, Joachim Krüger and Thomas Terberger

INTRODUCTION

In 1996, Ronald Borgwardt, an archaeological volunteer from the Tollense region, discovered a human humerus with an embedded flint arrowhead, and a wooden club made of ash wood and shaped like a baseball bat, together with further human skeletal material in the west bank of the River Tollense near the village of Weltzin (site 20) in Mecklenburg-Vorpommern (Figs. 10.1 and 10.2).

During test excavations conducted in 1996 by the Heritage Service Mecklenburg-Vorpommern (Landesamt für Bodendenkmalpflege), many more disarticulated skeletal remains of humans and animals, especially horses, were discovered under a peat layer (Jantzen 1997). The number of skulls alone made it clear that several individuals were represented; yet, at the same time, a burial context seemed quite unlikely because the bones were mainly found widely scattered and not in anatomically correct positions. There were also further hints at violent actions: a skull with an unhealed impression fracture in the frontal bone is the most prominent example.

A radiocarbon date of 1343 ± 63 cal. BC (KN-5020; 3079 ± 54 BP) helped to establish the chronological position of the finds; the skeletal remains could thereby be placed in Period II/III of the Nordic Bronze Age; in later research, a greater series of AMS dates placed the material firmly in Period III (Jantzen, Jantzen and Terberger 2008: 91).

10.1: Location map of the Tollense Valley in Mecklenburg-Vorpommern. (Graph: Jana Dräger, Lower Saxony Heritage Service using data of the LAIV M-V, from GeoBasis DE/M-V 2012.)
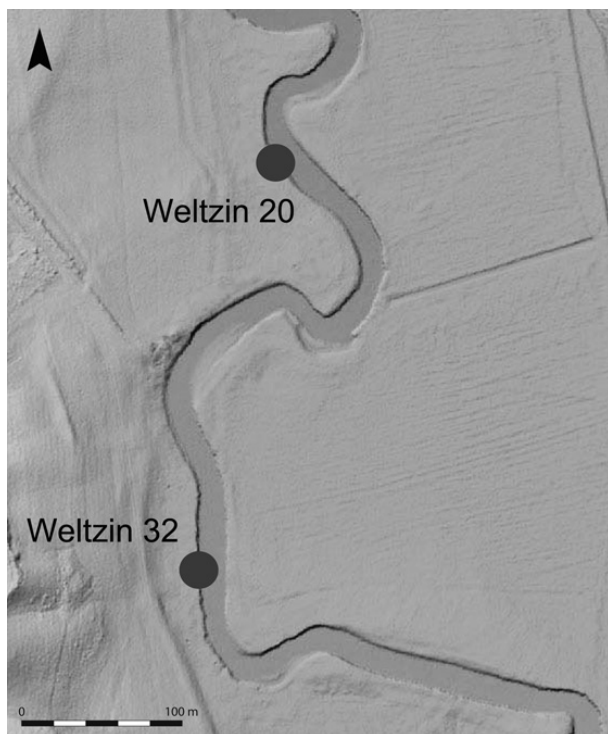
10.2: Location map of sites Weltzin 20 and 32 in the Tollense Valley. (Graph: Jana Dräger, Lower Saxony Heritage Service.)

Another wooden club, made of sloe wood and shaped like a croquet mallet, was found in the river bank by R. Borgwardt in 1999. Again, human skeletal remains were closely associated with this find (Jantzen et al. 2008: 93).

Human skeletal remains have emerged repeatedly after dredging work at several sites in the river valley, up to the 1990s. In recent years, additional find material was discovered during metal detector and underwater surveys. The find area is therefore much larger than the site at Weltzin 20; contemporaneous finds are known from different sites along a stretch of river about 2.5 kilometres long. The Tollense Valley has been the focus of intensive interdisciplinary research since 2008.

THE RIVER VALLEY AS AN ARCHAEOLOGICAL SITE

The River Tollense was deepened by dredging, primarily conducted in the 1980s, and the swiftness of the current increased. Therefore, the Tollense, although still meandering naturally, now runs in a deeper and narrower bed than it originally did (Fig. 10.3).

Geoscientific research has shown that the general course of the river in the archaeologically relevant area has only slightly changed through the millennia due to its position in a valley with relatively steep slopes. The Bronze Age river would have been broader and shallower than the modern one, its course characterized by cutoffs and reed zones and more affected by seasonal changes in the weather. Pollen analyses document a treeless river valley and a relatively open landscape above the slopes, with oak, lime, ash and elm; there are also

10.3: Aerial view of the Tollense Valley. (Photograph: Ronald Borgwardt.)

indications of human influence through cereal pollen. Peat formation on a larger scale only started after the deposition of the Bronze Age find layer. Through this, the character of the valley was changed and its originally quite varied relief was harmonized (Jantzen et al. 2008: 425).

The previously mentioned dredging work also resulted in significant numbers of skeletal remains and bronze objects which were once deposited within the Tollense or its river banks being redeposited on the meadows along the river.

At the moment, finds from Period III – AMS-dated skeletal remains and arrowshaft remains as well as typologically assigned bronze finds – are documented from different sites along a stretch of river about 2.5 kilometres long to the north and south of the village of Weltzin. These are partly dislocated finds, recently transported by the river or from dredged sediments, but, in many cases, they are also detected in situ in the river bank, under water or in excavations on land.

The Bronze Age find layer is documented in different sediments. Often (e.g., at Weltzin 32 [Fig. 10.2]), human skeletal remains and other finds are discovered in alluvial sands with mollusc remains up to 2.5 metres below the present water level, indicating deposition in a former river bed. At Weltzin 20, in contrast, the find layer is situated approximately 0.8–1.2 metres below ground surface, covered by peat and meadow, or in an area of a former sandbar, riverbank or shallow water area without any molluscs.

Among the finds detected in secondary positions in the dredged sediments deposited on the meadows near the river (skeletal remains, bronze and flint artefacts), a considerable number of socketed bronze arrowheads, mainly discovered during metal detector surveys, are of special importance. These finds are fundamental for understanding the find situation within the Tollense Valley.

CURRENT RESEARCH IN THE TOLLENSE VALLEY

Research has intensified since 2008, under direction of the Heritage Service Mecklenburg-Vorpommern (now Landesamt für Kultur und Denkmalpflege Mecklenburg-Vorpommern, Landesarchäologie), the Department of Prehistory of the University of Greifswald and the Lower Saxony Heritage Service (Niedersächsisches Landesamt für Denkmalpflege). Funded by the German Research Foundation (Deutsche Forschungsgemeinschaft [DFG]), new archaeological excavations, underwater surveys, osteoarchaeological analyses of human and animal bones, geoscientific analyses and metal detector surveys have been conducted since 2010, as well as series of AMS dating and palaeogenetic and isotopic analyses (Jantzen et al. 2011; Jantzen and Terberger 2011; Jantzen et al. 2014; Lidke et al. 2014; Terberger et al. 2014).

Through results of AMS dating on a wooden club (the so-called croquet mallet), on several shaft remains from socketed bronze arrowheads and mainly human skeletal material from several sites in the valley, the Bronze Age find layer with skeletal remains has been dated to 1350–1200 cal. BC. Therefore, it likely goes back to one or a small number of events within a short time span (Jantzen et al. 2011: 428). The most reliable dates argue for the (major) event to have taken place in the early thirteenth century cal. BC.

The assumption that the finds from the Tollense Valley represent remains of violent activity in the Bronze Age ('battlefield hypothesis') is based on the skeletal sample being strongly dominated by young adult males (see later discussion), partly with fatal lesions and the weapons discovered in the valley (predominantly flint and bronze arrowheads, indicating the use of bows and arrows). Furthermore, there are currently no traces of settlements in the valley or signs of burial structures or possible grave goods in relation to the skeletal remains.

The battlefield hypothesis interprets events as follows: victims of violent activity ended up in the river and adjacent areas – possibly at more than just one site; the decomposing bodies were fluvially transported at least locally; single skeletal elements as well as less decomposed bodies were deposited within the river or at river banks and then probably dislocated further by taphonomic processes.

ARCHAEOLOGY UNDER WATER

Due to the special find situation within a river valley, underwater archaeology plays an important role in the research. It is conducted by members of the Landesverband für Unterwasserarchäologie in Mecklenburg-Vorpommern. Skeletal material had been retrieved from the river banks and the river itself since 1996; bones were also known to be found on the meadows close to the river where dredged sediments had been deposited.

The Tollense's current causes constant change between river zones of erosion and deposition; this means that new find localities may be revealed repeatedly in the river banks. Underwater surveys therefore have to concentrate on checking the state of preservation at known sites, documenting finds and find localities and prospecting the river for find localities hitherto unknown. The stretch of river where finds are known is regularly inspected; the search for the definite start of the distribution of finds upstream is of great importance.

The results from the underwater surveys brilliantly illustrate the great extension of the Bronze Age find layer along the river. In addition, objects detected in the find layer under water enable new possibilities for the interpretation of the sites.

Several sites with displaced bones and in situ find layers in the river banks have been recorded during underwater surveys since 2008 (cf. Brinker, Krüger and Lübke 2010), together with other finds, such as a bone fish hook, a flint arrowhead or a bronze armring – all of which were discovered directly in the find layer.

Spectacular finds were discovered by the divers at Weltzin 32 after the valley flooded in 2011 due to heavy summer rains. The current exposed a new section of the Bronze Age find layer extending more than 30 metres in the west bank of the River Tollense. Clusters with hundreds of disarticulated human bones, ranging from hand and feet bones to skulls, were found in a fluviatile sand layer interspersed with mollusc remains.

Further finds were detected between the skeletal remains: a horn disc (diam. 3.7 centimetres) with two perforations, a flint arrowhead with wooden shaft remains (l. 2.5 centimetres), a gold spiral ring (l. 2.5 centimetres, diam. 1.7 centimetres) and two tin rings (diam. 2.6–2.7 centimetres and 3–3.2 centimetres, Fig. 10.4) together with four bronze spiral rolls (Krüger et al. 2012).

The gold spiral ring corresponds nicely to similar finds from burials and depositions from Period III in Mecklenburg-Vorpommern (Schubart 1972: 32, 44, 85) and thus very likely belongs to the chronological horizon of the skeletal elements around 1250 BC.

The tin rings are the oldest known finds of this kind from North Germany and may indicate a certain role the Tollense Valley had within a communication network or that single individuals represented in the skeletal sample

10.4: Weltzin 32: Tin rings and gold spiral ring. (Photograph: Gundula Lidke, Lower Saxony Heritage Service.)

operated within metal production and/or an exchange or trade network (cf. Krüger et al. 2012: 33–42).

These objects are interpreted as personal property, which – carried close to the body, probably in a small bag or container – may have eluded looting after the battle. It is possible that the owner(s) had already ended up in the river during the fighting.

Another possibility would be that the finds belong in a ritual sphere, but, even so, a connection to violent events is possible (Vandkilde 2011); for instance, an offering of booty, similar to events represented in Pre-Roman and Roman Iron Age war sacrifice sites in Scandinavia (cf. Ilkjær 2003).

ARCHAEOLOGY ON LAND

During the first surveys at Weltzin 20, conducted shortly after the discoveries by R. Borgwardt in 1996, a find layer close to the river bank with disarticulated bones, predominantly human but with some animal, was documented in several test trenches. The skeletal remains lay scattered and mostly not in anatomical position; it was seldom that body parts seemed to be at least partially preserved in context (e.g., the bones of the lower extremities of one individual; cf. Jantzen et al. 2008: 93).

The find layer that mainly contains skeletal remains has been documented on the west bank of River Tollense since 2009 (main site Weltzin 20) in an area of more than 200 square metres (state of research: 2012) (Fig. 10.5). Additionally, several test trenches were opened to check the distribution of the layer with skeletal remains at Weltzin 20 and at other sites along the river where under-water surveys had indicated the in situ find layer. All in all, the find layer seems to be closely connected to the river, with finds only found within a few metres of the modern river bank.

The find layer at Weltzin 20, which usually has a thickness of 5–20 centimetres, is found under degraded peat on sand. It mainly consists of disarticulated skeletal elements from human individuals, but disarticulated animal bones, mainly horse, and a few other objects were also documented. Of special interest are two bronze socketed arrowheads and six flint arrow-heads (l. 2.7–4.4 centimetres), which were found close to skeletal remains (Fig. 10.6), as well as a bone needle with a perforated triangular head (l. 4.7 centimetres) and a small bone disc (diam. 2.6 × 2.4 centimetres) with a central perforation. Another flint arrowhead has come to light in a test trench on the eastern bank of the River Tollense, opposite Weltzin 32, likewise directly in the Bronze Age layer with human skeletal remains.

A small fragile bronze ring (diam. 2 centimetres) was also discovered directly in the bone layer. It is decorated with four longitudinal grooves, the outer two of which are further subdivided by small ribs. Similar rings are

10.5: Skeletal remains in situ in the excavation. (Photograph: Gundula Lidke, Lower Saxony Heritage Service.)

known from Period III burials in Mecklenburg-Vorpommern; for instance, from Friedrichsruhe (mound II, *Glockenberg*: Beltz 1882: 273 with table 6.8; Schubart 1972: 31) or Peckatel (mound I, grave 3: Schubart 1972: 134 Kat.-Nr. 242). A similar decoration is documented on a gold finger ring from the Period III barrow in Grebs (grave 1: Just 1970: 193 f.). The typological classification for the Weltzin ring therefore fits the dates obtained on the skeletal remains in the Tollense Valley very well.

Concerning the excavated find layer, the number of such objects representing possibly personal belongings of conflict participants is very small in relation to the minimum number of individuals at Weltzin 20 (MNI at this site: fifty-six, state of research in 2011). Perhaps the victims were looted after battle but the ring, needle and bone disc were overlooked.

10.6: Selected flint arrowheads found in the find layer between 2009 and 2011. 1–4: finds from site Weltzin 20; 5: find from site Wodarg 25. (Photograph: Gundula Lidke, Lower Saxony Heritage Service.)

Natural wooden remains were found in parts of the excavation area at different sites closely above or directly on top of the skeletal remains. AMS results have shown these wooden remains to be of Iron Age date, so, despite their proximity to the bones they are not contemporaneous but probably indicate later taphonomic events. Similar results were obtained in dating wooden remains recovered from directly above the find layer during underwater surveys. During these events, the find layer with Bronze Age skeletal remains may have been disturbed in its upper regions, leading to single skeletal elements being displaced. In contrast, wooden remains from the southeast part of the excavation area at Weltzin 20, detected between and under skeletal remains, could be dated to 1460–1210 cal. BC and indicate a Bronze Age sedimentation. There seem to have been several stages of material deposition, but the find layer with skeletal remains appears to have remained intact to a larger extent because, to date, no later piece of wood was found between or under bones.

The find material and results from the excavations at the main find locality where finds can be documented in situ, Weltzin 20, provides the basis for the interpretation of the formation of the find layer. Test trenches on other sites in the Tollense Valley contribute to the interpretation of the situation of the river valley as a find area and possible theatre of conflict.

METAL DETECTOR SURVEYS

Prominent bronze objects have been recovered since the end of the 1990s, mainly from dredged sediments in the river valley which were deposited on the

10.7: Bronze arrowhead found during metal detector survey. (Photograph: Gundula Lidke, Lower Saxony Heritage Service.)

meadows, among them a fibula of type Spindlersfeld (Schoknecht 2000) and a decorated belt box (Schoknecht 2005). Ulrich (2008) published a list of several bronze objects from Periods II–IV: spearheads, socketed axes, sickles and different types of jewellery, as well as some socketed bronze arrowheads.

Systematic metal detector surveys started in 2010, which quickly led to an increase in find numbers, the most prestigious find being another gold spiral ring. At the end of 2011, about 100 bronze finds were known from the sites in the main find area. Socketed bronze arrowheads were primarily found at different locations in the area of the Tollense Valley (Fig. 10.7), often at sites also known for documented skeletal remains. Twenty-four of these arrowheads had come to light in the valley until 2011 (see Dombrowsky 2011, 2014).

In several cases, test trenches were placed at sites on both sides of the river where numerous bronze artefacts had been detected in dredged sediments. Skeletal remains of humans and horses discovered there probably also indicate former find layers in the river or river banks at these sites.

The dredged sediments were deposited where they had been taken out, so they can be closely linked to the respective stretch of river. Even redeposited, the objects and bones discovered there hint at (former) find layers in the river or river banks; they are therefore of great importance in regard to the overall picture of the distribution of Bronze Age finds in the river valley.

THE SKELETAL REMAINS

Up to March 2011, more than 2,900 human bones had been detected in the Tollense Valley; the majority of these were documented at Weltzin 20. Analysis

of the usually very well preserved skeletal material is complicated by the disarticulated and scattered appearance of the bones in the find layer.

The skeletal material does not represent a destroyed cemetery. The bones – mostly long bones, with bones from hands and feet being the least common – may indicate waterborne transport of bodies along the river and/or deposition in different states of disassembly. Individuals were probably at least partially preserved before deposition because the final find layer formation may have been further influenced by taphonomic processes.

Individuals at Weltzin 20 are represented by about 25 per cent of their skeletons, which also makes comprehensive determinations of sex and age difficult. Nevertheless, osteoarchaeological studies on the Tollense Valley material confirmed a dominance of young adult males in the skeletal sample of at least ninety-one individuals for the whole valley, with fifty-six of them represented at Weltzin 20 (state of research March 2011; MNI established via the number of right femora).

Several cases of lethal as well as healed traumata are documented in the skeletal sample from Weltzin 20. In addition to the humerus with an embedded flint arrowhead and the skull with the impression fracture, there are other bones with lesions suggesting blunt force and bowshots as well as a case of a femur fracture. Several lesions do not show any signs of healing, whereas some had obviously healed years earlier. All in all, the population represented by the Tollense Valley skeletal sample shows a higher rate of violence (5–7 per cent; state of research March 2011) than populations represented in Bronze Age cemeteries (Brinker 2009; Jantzen et al. 2011: 424 f.); by ongoing analysis of the skeletal material, this rate might even increase. The first results of palaeogenetic studies as well as isotope analyses (Sr, 13C, 15 N) point to a heterogeneous group of people; these analyses will eventually establish a better understanding of this population in the future.

WARFARE OR SACRIFICE?

Warfare is not a new element of Bronze Age society (e.g., Harding 2007; Vandkilde 2011), but, all in all, the finds discovered in the Tollense Valley at different sites – skeletal remains, weapons (such as wooden clubs and flint and bronze arrowheads) – indicate violent conflict on a scale hitherto unknown for the thirteenth-century BC. Furthermore, prestigious gold and tin objects as well as further bronze finds provide insights into a Bronze Age landscape of major importance related to a contact network. Some objects of bronze jewellery imply a region of origin in the southeast of Europe (cf. Dombrowsky 2011; 2014).

AMS dates on several skeletal remains as well as on one club and a couple of wooden arrowshaft remains indicate a narrow time corridor for the deposition

of bones and weapons in the valley. Typologically, the majority of bronze finds, apart from arrowheads discovered in dredged sediments at different sites, can be assigned to Period III, but they cannot *a priori* be directly connected to the skeletal remains documented in the excavation. Exceptions, of course, are the small bronze ring excavated in the bone find layer and the gold ring, tin rings and bronze spirals detected in the bone find layer under water.

Bronze finds and prestigious objects made of gold and tin, which also represent imported material, may be interpreted as individual belongings that escaped looting after battle. They could also be seen in context with ritual activities, connected with depositions of valuables in a wetland area, perhaps even after a violent conflict.

However, the situation in the Tollense Valley does not seem to represent a typical sacrificial site where a more restricted context should be expected: finds in the Tollense Valley are documented on a more than 2.5-kilometre long stretch of river.

At first sight, a find situation along the River Gudenå in Denmark, where weapons and other implements were obviously sacrificed in greater numbers during the Bronze Age, might be comparable, but there the finds represent depositions made periodically over several centuries from 1700 to 500 BC (Frost 2010). In contrast, finds from the Tollense Valley are mainly restricted to Period III (thirteenth century BC), even if there are also some older and younger finds. Bronze objects from Weltzin 20 and 32, detected in dredged sediments on the meadows and in situ in the excavation area or during underwater surveys, mainly consist of weapons (arrowheads) and jewellery elements that are not typical for hoards. Until 2011, six socketed arrowheads, one armring, a dress-pin and a finger ring had come to light at Weltzin 20, whereas an armring, two socketed arrowheads and the tin and bronze spiral rings discussed earlier were discovered at Weltzin 32. All in all, these finds do not seem to reflect former hoard finds.

The typical weaponry documented in Period III graves in Mecklenburg-Vorpommern consists of swords and axes for close combat, sometimes in combination with either a bow and arrow or a spear/lance. Each weapon type can also occur alone, but bows and arrows and spears/lances apparently do not appear together (Schmidt 2004: 59–60). No Period III swords have been detected in the Tollense Valley around Weltzin so far (state of research 2012), and there are also no well-documented contemporaneous graves in the vicinity. However, several spearheads from Period III are known among the metal detector survey finds as well as several Period III knives. Although at present these finds cannot be directly connected to the skeletal remains, they may well have served in a violent conflict in the valley. A connection with the skeletal remains is formed by the flint and bronze arrowheads found during excavations and underwater surveys directly in the find layer. The wooden clubs detected

in the river bank in relation to human bones are also connected. All in all, the weaponry represented in the Tollense Valley so far differs from that depicted in contemporaneous burials. Whether this also reflects a difference in the use of weapons for actual combat and the furnishing of the deceased with weapons remains unsolved at the moment.

The mass of human skeletal remains in the Tollense Valley indicates the presence of a large number of people with a dominance of young adult males. Traces of healed as well as lethal trauma on the bones point to various incidents of violence during these individuals' lives. Evidence for violence is documented in several Bronze Age burial sites elsewhere in Europe, for instance in Sund, Norway, where individuals showed lesions caused by bronze weapons on the postcranial skeletal material (Fyllingen 2003, 2006). The use of bronze spearheads for interpersonal violence is also documented in human skeletal remains from Over Vindinge, Denmark (Bennike 1985: 109–110), and Tormarton, United Kingdom (Osgood 2006: 336, 338). A bronze arrowhead stuck in a human vertebra was, for instance, found near Saalfeld, Germany (Fröhlich 1983: 224 Kat.-Nr. 883).

Near Alken in the Illerup Ådal, Denmark, the remains of approximately 200 individuals were discovered, probably those of warriors whose remains ended up in Lake Mossø after a lost battle (Gammelgaard 2012). The find situation at this late Pre-Roman/early Roman Iron Age site seems to be similar to that in the Tollense Valley, with mainly disarticulated human skeletal remains of young men discovered together with few weapons and other objects, but post-battle rituals seem to have played a major role at Alken (Franz 2009). Ritual activities in the form of cut marks or signs of mutilation are not visible in the skeletal material from the Tollense Valley.

At the moment, the finds from the sites around Weltzin in the Tollense Valley can be best explained as the result of violent actions in the course of which many individuals ended up in the river valley. The final formation of the find layer may have been influenced by fluvial processes. However, with regard to the general meaning and variability of Bronze Age rituals and offerings, sacrificial activities in the context of the unusual find situation in the Tollense Valley should also be taken into consideration.

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VIOLENCE AND RITUAL IN LATE BRONZE AGE BRITAIN: WEAPON DEPOSITIONS AND THEIR INTERPRETATION

Tobias Mörtz

INTRODUCTION

In January 1882, one of the most remarkable collections of Bronze Age weapons was discovered in Rush Fen near Wilburton (List 1, No. 5) during the digging of a drainage ditch. The damaged artefacts lay within a small space about 1 × 1.5 metres in size, directly on a layer of clay below a thick deposit of black peat. Sir John Evans, who subsequently published the finds, wondered about the interpretation of 'this exceedingly interesting and extensive hoard' (Evans 1884: 106). He opposed the idea of assigning the weapons to warriors and connecting the deposition with warlike events, but was 'rather in favour of regarding the hoard as the property of some early merchant of bronze, whose stock was in part old metal destined for the crucible, and in part tools and weapons possibly intended to be bartered away for a greater weight of metal in the form of broken or worn-out instruments' (Evans 1884: 114). Evans goes on to suggest that the artefacts were lost unintentionally (e.g., by the upsetting of a canoe in a formerly open body of water). As in his classic and influential scheme of differentiating between 'founder's hoards', 'merchant's hoards' and 'personal hoards' (Evans 1881: 456–459), he dismissed the possibility of a ritual explanation. It was V. Gordon Childe (1930: 43–45) who later added the category of 'votive hoards'. In this chapter, I intend to disprove Evans in two crucial aspects: first, I propose that the concealment of the artefacts from Wilburton and similar depositions should be understood as a cultic act which was, secondly, intimately connected to the actions of Bronze Age warriors.

WHAT IS A WEAPON DEPOSITION?

At first glance, the answer to this question seems to be obvious: a weapon deposition consists of weapons that were buried or sunk on purpose. This is of course the case, but with regard to other approaches, things become a little more complex. David Coombs (1975) and Regine Maraszek (2006: 196–198) considered a majority of swords and/or spearheads as sufficient for such a designation. However, taking a closer look at the hoards they discussed, the finds are still relatively heterogeneous and some include considerable quantities of tools, casting debris, ingots or unidentifiable fragments. Therefore, I propose redefining a weapon deposition as an assemblage of metalwork where non-martial items comprise 10 per cent or less of the total number of artefacts present. In doing so, a group of extensive hoards with clearly restricted content can be recognized which could be set apart from other discoveries of comparable quantity by their lack of a wide range of functionally and typologically different bronzes (Fig. 11.1). What makes them so special is primarily the total or near absence of axeheads. It is only in the find from Wilburton that more than one had been associated. The lesser importance in the quantity of axes stands in stark contrast to their overall appearance in hoards as they normally form the backbone of large

Find place	Swords (MNA)	Chapes (MNA)	Spearheads (MNA)	Barbed spearheads (MNA)	Javelins (MNA)	Ferrules (MNA)	Axes (MNA)	Gouges & chisels (MNA)	Knifes (MNA)	Rings (MNA)	Others (MNA)	TN	TNR	MNA
Extensive weapon hoards of Wilburton class:														
Blackmoor	19	3	39	-	23	1	-	1	-	20	1	134	124	107
Duddingston*	10	-	14	1	-	-	-	-	1	-	2	54	51	28
Pant-Y-Maen*	2	1	8	-	4	5	-	-	-	3	-	39	32	23
South Creake°	23	-	37	-	-	-	-	-	-	-	1	194	130	61
Wilburton	12	3	66	-	53	5	3	1	-	6	11	210	201	160
Extensive weapon hoards of Broadward class:														
Bishop's Castle*	2	-	3	1	-	-	-	-	-	-	-	9	8	6
Bramber°	-	-	52	8	-	7	1	2	2	4	6	111	109	82
Broadness	1	1	21	8	-	7	-	1	1	-	1	48	47	41
Broadward*	2	1	23	15	-	4	-	1	-	-	4	72	62	50
Little Wenlock*	2	-	18	1	-	-	1	-	-	-	-	30	27	22
Peelhill	1	-	25	-	-	1	1	-	-	3	-	44	35	31
Tattershall	4	-	22	2	-	6	-	-	1	2	7	168	159	44

11.1: Composition table of extensive weapon hoards in Britain.
★Certainly incomplete/artefacts lost or melted down, °probably incomplete
TN, total number of individual pieces; *TNR*, total number of individual pieces after reconstruction; *MNA*, minimal number of artefacts

deposits. John Evans (1881: 469) already noticed this relationship, but it was not investigated further. In contrast to other so called 'founder's hoards', weapon deposits do not contain any raw material, ingots or other items directly attributable to the process of casting or recycling.

Whereas small hoards composed entirely of swords and/or spearheads can be found in nearly all parts of the continent (Brandherm 2007; Brandherm and Horn 2012), those amounting to more than twenty-five artefacts represent a peculiarity of northwestern Europe, particularly Britain. Apart from their number, both kinds of deposits are differentiated by the condition of the assembled items: the more weapons that were collected together for a deposition, the worse their condition. In the larger hoards, swords are regularly bent and broken at least once (Fig. 11.3). Some show traces of treatment by fire, and the blades had been rendered useless by intensive notching. The same is true for most of the spearheads: all organic parts (i.e., wooden shafts and hilt plates) had been forcefully removed, leaving just minor remains in hard to reach places, especially within sockets. Swords and spearheads are regularly accompanied by further martial equipment (i.e., small rings that served to attach the scabbard to a belt; Mörtz 2012), chapes and ferrules. The quantity of the latter rarely matches that of the spearheads, suggesting that not all wooden shafts had been furnished with metal fittings at their lower ends. The same is true for scabbards with regard to chapes.

These specific assemblages of weapons and weapon-related artefacts will be the focus of this chapter (Lists 1 and 2). They are mainly distributed in Southern Britain with Duddingston Loch (List 1, No. 2) and Peelhill Farm (List 2, No. 6) as remarkable outliers in the lowlands of Scotland (Fig. 11.2). Most of these hoards were found in a formerly or recently watery or swampy environment which made recovery difficult, if not impossible, for the ancient owners. These were places which had surely not been the scene of fighting. Since modern discovery is usually poorly documented, it is uncertain whether all items were saved. This even applies to relatively recent discoveries like Bramber (List 2, No. 2). In other cases, such as Pant-Y-Maen (List 1, No. 3) or Willow Moor (List 2, No. 5), the majority of artefacts were subsequently melted down or otherwise lost. The limited information about the immediate milieu of their deposition represents an enduring problem for a thorough analysis of Bronze Age hoards in general.

Another and more specific issue is the fragmented and partly broken-down state of the artefacts, which hinders a quantitative approach.

Therefore, I decided to adopt a method from investigations into large Late Iron Age assemblages at Celtic cult places in Central Europe (Mörtz 2010). Following Gérard Bataille (2006), all recovered pieces are individually counted (TN, Total Number), an attempt is then made to reconstruct the pieces into whole artefacts (TNR, Total Number after Reconstruction).
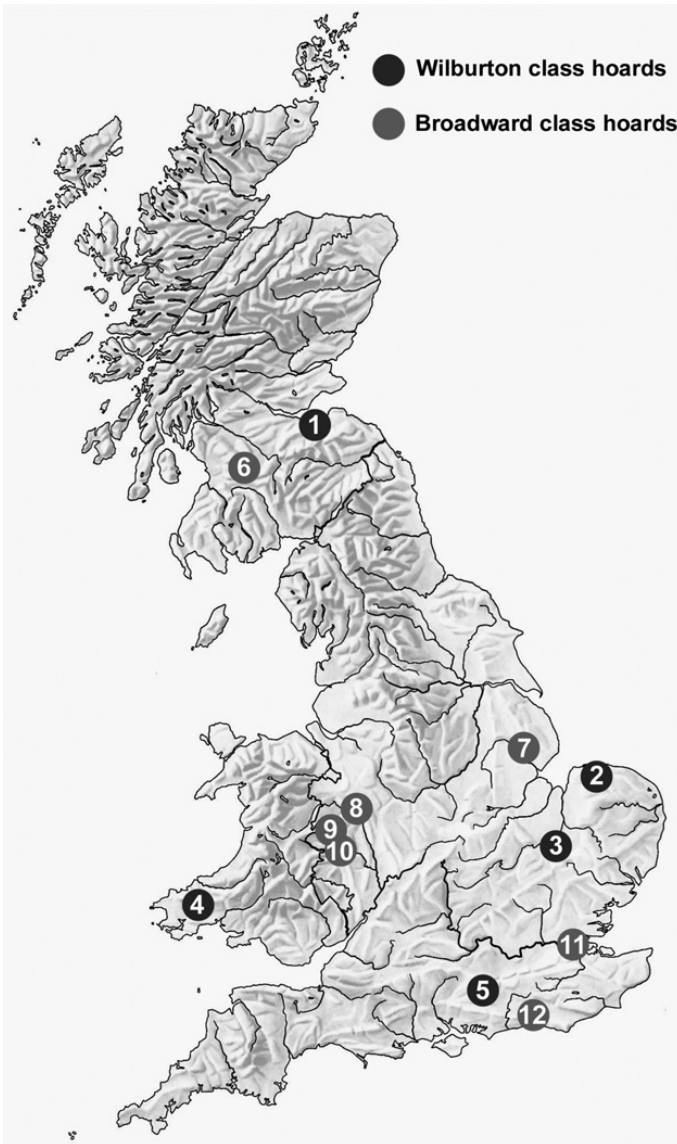
11.2: Map of extensive Late Bronze Age weapon hoards in Britain: (1) Duddingston Loch, (2) South Creake-Waterden, (3) Wilburton, (4) Pant-Y-Maen, (5) Blackmoor, (6) Peelhill Farm, (7),Tattershall, (8) Little Wenlock, (9) Bishop's Castle, (10) Broadward, (11) Broadness and (12) Bramber.

In doing so, and with reference to unique parts like tips of sword blades, a minimal number of each weapon category can be assessed (MNA, Minimal Number of Artefacts). Items or fragments smaller than 2 × 2 centimetres, and those obviously belonging to other artefacts (e.g., rivets) were excluded from analysis. By applying the method of the MNA, different deposits with varying degrees of fragmentation become objectively comparable. What can be said
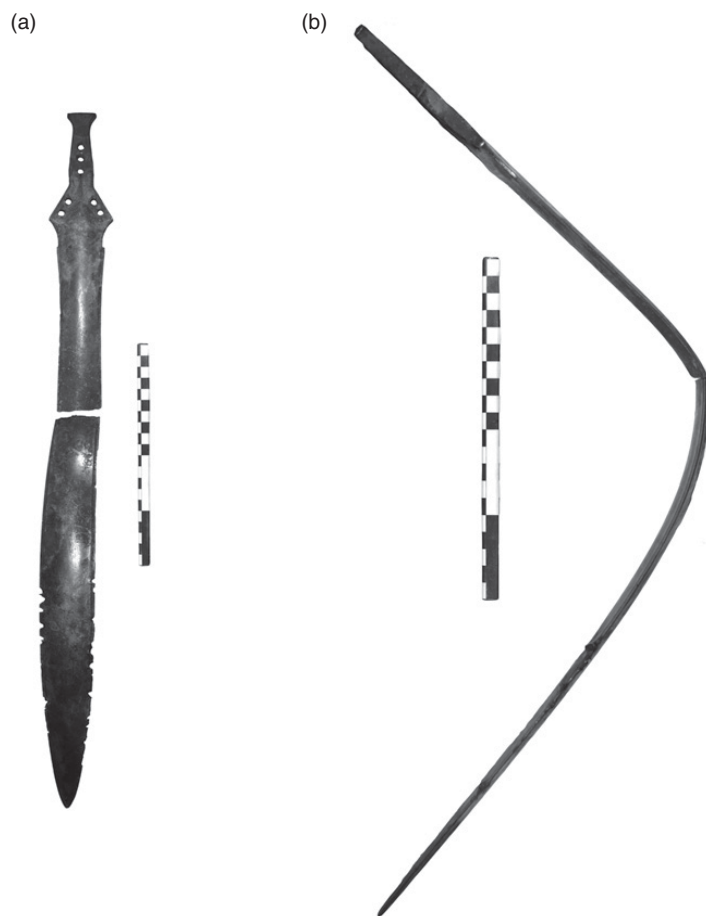
11.3: Bent and broken sword from the Blackmoor hoard. (Courtesy of Hampshire County Museum.)

with regard to their typochronological range is that the artefacts collected in the extensive weapon hoards were most probably used and given up at the same time.

Intriguing combinations of different categories of armament can be detected within the better known finds, which speaks in favour of treating the collections as the possessions of a group of warriors. For example, in the case of Wilburton, the added number of swords and javelins matches the total quantity of spearheads. In assuming that all fighters were equipped with a spear, one group may have additionally carried a sword and a second a javelin. Only a few also possessed a knife. Insofar as tools like axes, chisels and gouges are part of a deposition, their number is very limited, and no two of them belong to the same type. Therefore, they can best be understood as devices for repair and maintenance of the organic parts of weapons, particularly shafts. Referring to fighting methods in the ancient Mediterranean, David Coombs (1975: 74) also

suggested a 'combination of short throwing spear and long thrusting spear'. However, his assumption that duelling with swords was more common in Northern Britain because of the higher number of corresponding hoards is certainly misleading as the great mass of river finds in the south, especially from the Thames (Needham and Burgess 1980; Thomas 1999; York 2002), had not been taken into consideration.

Extensive weapon deposits can be further divided based on the number of swords as well as the occurrence and respective absence of barbed spearheads and javelins, which mutually exclude each other (Fig. 11.1). The latter are defined by their short lengths of less than 15 centimetres (Fig. 11.4). They were, therefore, best suited for throwing and/or thrusting as opposed to fencing (Anderson 2011). Because of the few well-known and probably complete discoveries, the reuse of the Wilburton and Broadward finds (List 2, No. 4) as class-defining eponyms is inevitable. The former was chosen by Hubert N. Savory (1958: 28–34) to name a characteristic type of sword as well as a chronologically defined technological complex in Southern Britain connected to their appearance in the archaeological record. As most of these associations are weapon hoards, an additional meaning is not problematic.

11.4: Head of a spear (*left*) compared to the head of a javelin (*right*) from the Blackmoor hoard. (Courtesy of Trustees of the British Museum London, reg. –no. 1891,0514.4 and WG.2106.)

Colin Burgess (1968: 36) later added mainly axehead types, while David Coombs (1988: 575) identified rare and exceptional artefacts. Radiocarbon dating of wooden remains from inside the sockets of spearheads recovered from Blackmoor and Wilburton confirm that the deposition generally occurred between 1100 and 900 cal. BC (Needham 1996: 136), which sets the timeframe for all other extensive weapon hoards of the same class (List 1).

Colin Burgess (1968: 40–42) was also the first to subsume a group of spearhead-dominated deposits into the 'Broadward tradition'. In contrast to Wilburton, this complex is understood to represent a regional phenomenon in Western England and Wales. However, this geographical limitation cannot be supported since Bramber and Broadness (List 2, No. 3) are typical hoards found near the Channel Coast and in the lower Thames area (Fig. 11.2). In their seminal paper on the Broadward and similar discoveries, Colin Burgess, David Coombs and D. Gareth Davies (1972: 228–233) differentiated between two series of deposits, including barbed spearheads as a key feature with either an emphasis on axeheads, tools and ingot metal or martial equipment. Only the latter are true weapon hoards, as exemplified by the eponymous assemblage, whereas the other finds with mixed composition should be classified otherwise.

Recent studies of the so-called carp's-tongue complex in Southeastern Britain have further shown that these finds are only present within the ninth century BC (Brandherm and Burgess 2008). This opens up the possibility of a chronological, as opposed to a regional, division of both metalwork associations. Because typical artefacts, above all carp's-tongue swords and barbed spearheads, do not intermix with each other, weapon hoards of the Broadward class (List 2) are therefore either older or a very restricted phenomenon parallel to other deposits with differing rules for how they were assembled. Regarding the small number of corresponding finds, the second assumption appears to be more probable and is supported by yet unpublished radiocarbon dates for the hoards from Broadward and Peelhill Farm (pers. comm. Richard Bradley and Trevor Cowie).

CONFLICT?

David Coombs (1975: 70) considered that 'many of the objects appear to have been collected after battle or a period of hostilities' and connected their deposition to ritual activities at watery places. To support this interpretation, he searched for indications of an intensification of conflict in the Late Bronze Age of Britain. Coombs (1975: 75–77) and more recently Julie Wileman (2009: 75–92) identified the structured land division by rectangular field systems, population growth and a climatic deterioration as possible reasons for violent encounters between different groups. Such events are hard to prove when only material relics can be consulted. The lack of human remains

(Brück 1995; Burgess 1976) also hinders a balanced judgment about the intensity of Late Bronze Age warfare in Northwestern Europe. Furthermore, in pressing too hard on the mostly ambivalent archaeological finds and features, one also runs into the danger of producing a circular argument. Swords and spears were probably not only put into action in times of trouble, and violence would not have been the only possible response to a situation of crisis. Interpreting extensive weapon hoards in the context of hostile interactions is thus independent of the evidence for an intensification of conflict.

Bronze Age swords and spears were generally intended to be used and were products of at least sufficient and serviceable quality (Anderson 2011; Bridgford 1997, 1998; Mödlinger 2011a, 2011b; Quilliec 2007). Indeed, several items from the extensive weapon hoards show traces of blade-to-blade contact which caused relatively shallow nicks (Fig. 11.5). Experimental testing with modern replicas has reproduced comparable damage (Anderson 2011; Molloy 2007; 2011), and, as the ancient defects had not been repaired – which would have been feasible without great effort – martial deployment obviously ended the use of the artefacts. Instead of restoring their functionality, something that may have happened several times previously, the weapons were further destroyed. One way of doing so was to cut many regular and deep notches into the blade, perhaps by using axes. In some cases, the employed instrument had been turned, so as to bend out the edges. In contrast to nicks resulting from fighting, the latter were not repairable without difficulty and rendered the affected artefacts useless. Both kinds of damage can be observed, even on the same weapon (Fig. 11.5).

Because many items were also subjected to treatment by fire and hacked into several pieces, the comparably slight traces of their martial use are not always easily detectable, but they are often demonstrable in a certain number of cases. From these observations it can be deduced that a warlike event, defined here in its broadest sense as a hostile and violent interaction between different groups, preceded the ritual destruction of the weapons and their final deposition. For obvious reasons, all these acts were most probably carried out by the victors who collected the belongings of the defeated enemy from the scene of fighting. Analogous activities are known archaeologically and historically in other times and regions. They are commonly referred to as 'war booty offerings'. In Archaic Greece (Baitinger 2011; Jackson 1991; Pritchett 1979: 277–295; Rouse 1902: 95–148), as well as in Late Iron Age Gaul (Arcelin and Brunaux 2003; Müller 1990: 76–110; Steuer 2006: 28–33), the captured arms and armour were consecrated and publicly presented in sanctuaries. The closest parallel to the extensive weapon hoards of Late Bronze Age Britain are the massive bog finds of Northern Europe dating to the Roman Iron Age and Migration Period

(a)   (b)
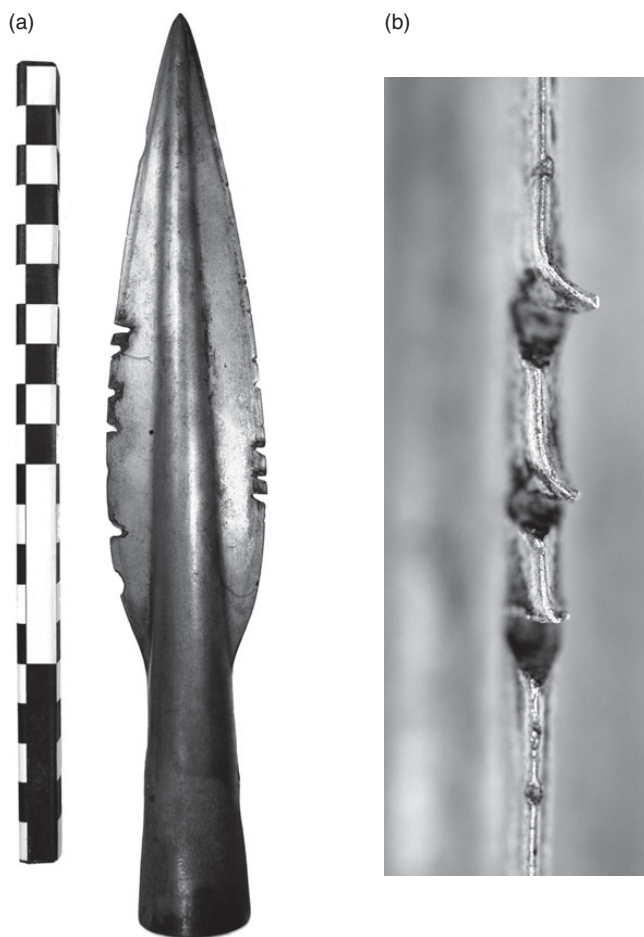
11.5: Spearhead from the Blackmoor hoard showing minor nicks, most probably the result of fighting (*left and right*) and intentional notching (*centre*). (Courtesy of Trustees of the British Museum London, reg. -no. 1891,0514.9.)

(Bemmann and Bemmann 1998: 321–354; Blankenfeldt and Rau 2009; Ilkjær 2003; Steuer 2006: 33–41).

In all these cases, the condition of the armament is very similar in showing functional as well as ritual damage (Baitinger 2011: 142–144; Bemmann and Bemmann 1998: 312–317; Biborski and Ilkjær 2006; Brunaux and Rapin 1988: 164–166; Gebühr 1980; Gundelwein 1994; Lejars 1998: 346f.; Müller 1990: 86–92). The correspondence in the selection and treatment of the artefacts justifies an analogous interpretation (i.e., the weapons were collected after violent encounters and deposited as cultic offerings). Therefore, this phenomenon can be traced back to the second millennium BC (Mörtz 2010). The question of who was fighting who and why cannot be answered for the Late Bronze Age. Perhaps cattle raiding was a prime motivation for attacks, as suggested by Coombs (1975: 75f.). This assumption can be backed up by the

increasing evidence of intensive animal husbandry during this period (Cunliffe 2004; Pryor 1996; Serjeantson 2007).

Although all the weapons had probably been collected and sacrificed by the victors, the size of the warrior bands cannot simply be deduced from the number of artefacts in each hoard. Usually, a one-third loss of combatants suffices an inevitable defeat for the affected party because coordinated action is no longer feasible (Ilkjær and Iversen 2009: 144–145; Pauli Jensen et al. 2003: 311). Because of the weak discipline in non-state fighting groups, which must chiefly be attributed to the absence of institutionalized command structures, flight sets in even sooner, with everyone trying to reach safe territory individually after a very low number of casualties (Peter-Röcher 2007: 97–98). The dispersal prevents a total defeat, if this is intended at all, and may serve as explanation for the minor quantity of swords that have been found. In contrast to spears and javelins, they were carried directly on the body and could not easily be thrown away. Swords were therefore possibly only captured when their owner died or had been taken prisoner. While this remains mere guesswork, it has to be stressed that the warring groups could have been much larger than indicated by the number of deposited items.

Not all Late Bronze Age weapons have been accepted by modern researchers as fully serviceable killing tools. Above all, it is the peculiar design of the barbed spearheads (Fig. 11.6) that has caused doubts about their functionality. The whole range of different proposals concerning their prime purpose cannot be described in detail here, but, for example, following the discovery of the Broadward hoard, a lively debate about the former size of fish in inland waters arose because the artefacts were regarded as harpoons (Barnwell 1872: 346; Rocke 1872: 342). This supposition was apparently further strengthened by their regular discovery in riparian contexts. One hundred years later, Margret Ehrenberg (1977: 23) revived these arguments. John Evans (1881: 338), as well as John E. Bartlett and C. F. Christopher Hawkes (1965), favoured a use for hunting large mammals, but the deployment against other humans was never really taken into consideration. It is often stated that the remaining clay cores inside the sockets prevented a solid hafting and the allegedly too thin casting could not withstand the rigour of combat. As opposed to other types of spearheads (Anderson 2011; Davis 2006: 95–97), barbed examples have so far not been experimentally tested with replicas. Consequently, it is premature to judge their qualities with only abstract reasoning.

Without a doubt, the design of the barbed spearheads can be described as a hypermorph, excessively stressing a martial perception. However, this does not mean that they were of purely ceremonial use, as has also been proposed (Burgess et al. 1972: 227–228). Some parts (e.g., the barbs or the extra-long rivets) may never had any practical purpose, but this must not be true for the whole weapon. Since swords only appear in a small number together with barbed spearheads, or

11.6: Barbed spearhead from the Broadness hoard. (Courtesy of Trustees of the British Museum London, reg. -no. WG.1712.)

not at all, this indicates a very similar deployment. Maybe they were hafted with only a very short shaft and employed for slashing at close quarters, as Kate Anderson (2011) also suggested as a use of ordinary leaf-shaped specimens. For the moment, the question of the functionality of barbed spearheads cannot be settled. Although they were a short-lived phenomenon and therefore not a very successful experiment, there is no reason to disregard them as practical killing devices that were put into action against humans. Their occurrence does not speak against a connection of Broadward class hoards (List 2) to warlike events.

WHY DEPOSITION?

David Coombs (1975) was not only the first researcher to suggest a ritual deposition of weapons after warlike events; he also tried to detect indications of the reconstruction of Late Bronze Age society using such hoards as a basis for his analysis. He primarily cited cauldrons and alleged horse and wagon equipment as prestigious items whose possession was argued to have been limited to social elites (Coombs 1975: 70–75). Apart from the problematic and highly

disputable identification of the latter, not all deposits contained these artefacts. As warrior burials and graves in general are missing during the Late Bronze Age in Britain, hoards were taken as proxies to describe a stratified society. But this conclusion cannot simply be deduced from the archaeological material, especially not by considering just one category of finds. Furthermore, it must also be stressed that even if a chain of command had been in existence, these structures are not necessarily based on everyday relations of dominance and obedience. I will instead proceed to describe the time span when warlike events and violence between different groups occurred as something separated from normal life by a ritual framework within which the deposition of the enemies' weapons ended a threatening state of affairs.

Killing other humans is always a delicate enterprise and, except for murder or conditions of total imbalance of powers (e.g., dictatorship), it is restricted to very few socially sanctioned situations (Gladigow 1986; von Stietencron 1995). Warfare against a clearly defined enemy can be considered as one of these. The arrival at a position whereby people kill members of another group is a social and cultural phenomenon. This attitude must be learned and reasoned but is also changeable. Those who fall victim to raiding may be at the mercy of the same people with whom trade had once been intense or intermarriage common. After ending intergroup violence, social and economic relationships are open to renegotiation. Furthermore, the perception of someone as a foe does not necessarily mean that they are seen statically as an absolute opposite to oneself. The Pokot in Northern Kenya, for example, mainly raid the Turkana, whom they say to have the most similar lifestyle, beliefs, habits and such compared to other neighbouring groups (Bollig 1992: 254–266; 1995: 387–391). Consequently, killing enemies is socially constructed and thereby a limited as well as a legitimized disposition.

In societies based on kinship, this readiness would have been brought about by ritual acts (Bollig 1992: 267–280; Goldschmidt 1989: 19–20), towards which archaeology is mostly blind as they leave no, or only faint, material traces. Communal gatherings are organized, encompassing commensality and a public appointment of those willing to enter hostile territory, raid and kill. What these acts do is change the affected persons mentally and usually also physically in order to set them apart from those who will be left behind. In addition to wearing a particular dress and/or war paint, various restrictions come into force (e.g., regarding food or sexual intercourse). All these adjustments express the feeling of otherness and affirm the loyalty between the warriors. Strengthening the sentiment of separation was a necessary prerequisite for justifying the killing of humans and, thereby, constitutive for the sacrifice of the captured weapons.

According to the classic scheme of 'rites de passage' (van Gennep 1909), the chosen ones are now perceived to be in a state of liminality, forming a special bond that Victor Turner (1969) described as 'communitas'. Everyday rules have

no meaning anymore and are often inversed. Consequently, killing is no longer prohibited, but explicitly desired. Alliances, established by marriage, exchange and/or gift-giving, can be cancelled and transformed into hostility. The initial rituals embody a message towards the community and also towards nonempirical referents (i.e., superhuman beings of a different kind whose support is required). If all oracles appear promising, the martial enterprise is understood as blessed. This communication promoted the feeling of confidence, helped to cope with fear and is by no means restricted to non-state societies (Kiefer 1970: 589–591; Rüpke 1990: 131–132).

Being successful in warlike events enhances status and often corresponds with an idealized male image as a brave and fearless warrior (Bollig 1992: 293–300; Goldschmidt 1986). But these achievements cannot directly be transferred into political power. Having been in closest contact with the enemy and death, returning fighters, above all successful killers, were forced to spend time in seclusion and go through a series of rituals which served to ease their reintegration into the community. These acts closed the liminal state of communitas. This resumption of normality was most likely also the moment when the sacrifice of any captured weapons and armour took place: the victory was confirmed. By being public, the rituals ensured the remembrance and effectiveness of the acts in a non-literate society (Halbwachs 1925).

The concept of liminality can further explain why swords and spears were not reused by the victors. It is widely accepted that not only people, but also things have a biography (Gosden and Marshall 1999; Joy 2009; Kopytoff 1986). Weapons are very tightly bound to their owners (Kristiansen 2002: 329–331; Molloy 2011; Pearce 2013; Whitley 2002). They embody grand histories of survival and heroic deeds, whether real or imagined. Possessing and using arms is a necessary prerequisite for being recognized and accepted as a warrior. Just as individuals willing to carry out violent attacks against others enter into a state of liminality, their weapons are transformed, too. Thus, the biographies of the captured items could not be ignored by the victors because they perceived the collected artefacts as hostile and polluted. Sacrificing and handing them over to the responsibility of superhuman beings was required and inevitable. This transfer could have been manifested by deliberate destruction, which reinforced the finality of the acts. Since not all things included in the Late Bronze Age weapon hoards had been bent, broken or burnt, an individual choice of how to treat each artefact was also involved. The heaviest damage may well have been inflicted on those items with which combatants of the victorious group had been wounded or killed (Horn 2011: 59–63; Mörtz 2013).

As long as corresponding taboos are respected, the captured and sacrificed weapons would not have to be concealed. Caesar (Commentarii de bello Gallico VI, 17) describes large heaps of war booty and other valuables in

Celtic sanctuaries. The reuse of these artefacts was forbidden by the severest punishment since they belonged to the gods. Presenting this model, it is possible to argue that there is no stark contrast in the treatment of enemy armament during the Late Bronze Age of Britain and the Roman Iron Age in Northern Europe. The difference of public display instead of deposition out of sight in wetlands can chiefly be attributed to diverging beliefs and cultic demands put into effect by means of a communal performance. Alas, a vision of the prehistoric rationale will never be revealed solely through the material remains. However, an analytic differentiation between thinking and acting is probably a consequence of the Enlightenment (Bell 1992; Brück 1999).

CONCLUSION

The interpretation of Bronze Age deposits in Britain had been, and partly still is, heavily influenced by John Evans economic scheme of separating 'founder's hoards', 'merchant's hoards' and 'personal hoards'. As has been shown, none of these categories can be considered a sufficient explanation for the special treatment of those weapons grouped together and deposited in large quantities at watery places. The fragmentation of the artefacts is mostly taken as an indication of the intent to melt them down and recycle the metal. The sizes are far from regular though. Only the swords were all broken at the thinnest and weakest part of their blades. While some were left in that state, the majority were further divided into pieces of unequal length. Moreover, the intense notching of the blade edges is hardly explained by a purely utilitarian approach. Rather, the weapons show traces of their use-life: an employment in violent action against other humans and ritual damage inflicted on them in the course of their deposition. Therefore, the items had most likely been collected after warlike events by the victors and subsequently consecrated to superhuman beings. I strongly argue that the reasons for weapon hoarding are therefore of a cultic nature.

What is assessed and legitimized as violence depends on cultural-specific norms, which in non-literate and non-state societies are determined by communal consent. Ritual could function as a means to set apart special times and circumstances for the permitted killing of humans. Because group affiliation is not fixed but situational, it also defines who will be the victim during such periodic outbreaks of violence. The public deposition of weapons that were used by the defeated can be understood as a material manifestation of reintegrating acts closing a state of liminality for the warriors. The sentiment of separation prevented a takeover of the defeated armament and promoted their destruction and sacrifice. These acts cannot solely be enforced by elites and depend on the confirmation of society as a whole (Bell 1992: 169–223). The needs of the many (i.e., control of violence, delimitation from other groups and communication with superhuman beings) thus outweighed the

political ambitions of the few. Therefore, the practice of weapon deposition aimed at the confirmation of togetherness and otherness in contrast to an enemy. In short, it created identity.

APPENDICES

LIST 1   EXTENSIVE WEAPON HOARDS OF WILBURTON CLASS IN BRITAIN

1.1 *Blackmoor − Woolmer Forest, Hampshire, England*: Evans 1881: 464, no. 14; Colquhoun 1979; Colquhoun and Burgess 1988: 44, no. 171; Maraszek 2006: 424f., ENG/HA3

1.2 *Duddingston Loch, City of Edinburgh, Scotland*: Wilson 1851: 225−228; Anderson 1878/79: 329f.; Evans 1881: 465, no. 24; Montelius 1908: 150f., no. 141; Callander 1921/22: 360−364; Coles 1959/60: 117; Burgess 1976: 92, no. 43; Colquhoun and Burgess 1988: 52, no. 234; Brück 1995: 276, H2; Maraszek 2006: 379f., SCO/LO9; Cowie and O'Connor 2007: 318−321

1.3 *Pant-Y-Maen, Dyfed, Wales*: Barnwell 1864: 221-231; Evans 1881: 464, no. 16; Montelius 1908: 140, no. 108; Griffiths 1958; Burgess et al. 1972: 240; Colquhoun and Burgess 1988: 86f., no. 446; Maraszek 2006: 491f., WAL/DY2

1.4 *South Creake I − Waterden, Norfolk, England*: Cheetham 1977: 31f.; Colquhoun and Burgess 1988: 80, no. 387; Pendleton 1999: 203, no. 1944; Maraszek 2006: 459−461, ENG/NR40

1.5 *Wilburton − Rush Fen, Cambridgeshire, England*: Evans 1884; O'Connor 1980: 370f., no. 129; Colquhoun and Burgess 1988: 42, no. 161−163; Pendleton 1999: 200f., no. 5717

LIST 2   EXTENSIVE WEAPON HOARDS OF BROADWARD CLASS IN BRITAIN

1.1 *Bishop's Castle, Shropshire, England*: Rocke 1872: 339; Chitty 1928: 131; Burgess et al. 1972: 240; Colquhoun and Burgess 1988: 128; Maraszek 2006: 465, ENG/SH1

1.2 *Bramber, West Sussex, England*: Aldsworth et al. 1981; Brück 1995: 275, F1; Maraszek 2006: 479, ENG/WS2

1.3 *Broadness, Kent, England*: Smith 1909-11; Burgess et al. 1972: 237f.; Colquhoun and Burgess 1988: 126

1.4 *Broadward, Shropshire, England*: Barnwell 1872; Barnwell 1873; Rocke 1872; Banks 1873; Evans 1881: 465, no. 30; Montelius 1908: 147, no. 124; Burgess et al. 1972: 241f.; Colquhoun and Burgess 1988: 85, no. 435; Maraszek 2006: 465, ENG/SH2

1.5 *Little Wenlock – Willow Moor, Shropshire, England*: Dukes 1836; Evans 1881: 465, no. 41 and no. 44; Chitty 1928; Burgess et al. 1972: 242f.; Pryor 1980: 14, no. 110; Savory 1980: 117, no. 267; Colquhoun and Burgess 1988: 87, no. 449; Mullin 2003: 100; Maraszek 2006: 465f., ENG/SH3

1.6 *Peelhill Farm, South Lanarkshire, Scotland*: Coles 1959/60: 115; Coles and Scott 1962/63; Burgess et al. 1972: 239; Colquhoun and Burgess 1988: 93, no. 497; Maraszek 2006: 382, SCO/ST10

1.7 *Tattershall, Lincolnshire, England*: Bruns and Daubney 2005/06

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CHAPTER TWELVE

'WARRIOR GRAVES' VS. WARRIOR GRAVES IN THE BRONZE AGE AEGEAN

Ioannis Georganas

INTRODUCTION

Burials with weapons are one of the most striking features of Aegean Bronze and Early Iron Age archaeology. Such burials appear as early as the Early Bronze Age and continue well into the Early Iron Age. Although the type of graves used and the nature of the artefact assemblages vary temporally and spatially, all of the burials are usually of males accompanied by weapons; in some cases, these are not only numerous but also spectacular. Well-known examples come from Grave Circles A and B at Mycenae (Mylonas 1973; Schliemann 1880) and the Late Minoan cemeteries around Knossos (Evans 1905; Hood 1956; Hood and de Jong 1952), which have led archaeologists to identify these burials with elite warriors, possibly quite similar to those portrayed in the Homeric epics. It has become obvious, however, that in some cases the occupants of these graves may not have been warriors after all because the (admittedly understudied) osteological evidence suggests that they were either too young to be warriors or did not exhibit any combat-related trauma or injuries (Angel 1945, 1973; Dickinson et al. 2012; Nafplioti in press; Smith 2009). Moreover, some scholars have argued that the artefacts (i.e., the weapons) found in such graves could be misleading and should not be seen as straightforward biographical facts that inform us about the life of the deceased, but should instead be treated as metaphors for a particular elite identity and ethos (Whitley 2002).

At the same time, there are burials where the skeletons exhibit weapon-related trauma, but the deceased are not accompanied by weapons. How are we to identify these individuals? Can we consider them as warriors, maybe the rank and file, or as civilian casualties of war?

This chapter attempts to provide answers to these questions and to suggest new ways of treating the archaeological material.

BURIALS WITH WEAPONS AND EVIDENCE FOR COMBAT TRAUMA

Two burials from Grave Circle B at Mycenae fall into this category; the first is found in Tomb Z (59 Myc.). The deceased was very tall and broad-shouldered, thick-boned, with large hands and feet. He was about fifty years old at the time of death, and his skeleton exhibits severe signs of post-traumatic arthritis. Moreover, two noticeable depressions in his skull were apparently the result of heavy blows, presumably from a right-handed opponent (Angel 1973: 381–382, pl. 245, 249). From the context and contents of the grave (the deceased was accompanied by a sword with an ivory pommel), it could be surmised that the skeleton belonged to someone of rank. Arnott (1999: 500) has argued that this individual's condition was exacerbated by extraordinary stress on the spine, perhaps by sports or weapon-training and/or shield-carrying.

The second case comes from Tomb Γ (51 Myc.). The deceased was about thirty years old, tall and strong-boned with large feet. This particular individual had been subjected to trephination, presumably to relieve fractures on the skull which might have been the result of a weapon blow (Angel 1973: 380).

These two cases demonstrate that the individuals had been involved in a violent incident during their lifetime which resulted in their injury. Although we cannot be certain of the exact nature of these incidents, we could say that both individuals survived their injuries, which is indicative, amongst other things, of the high skills of Bronze Age doctors (Arnott 1999).

BURIALS WITH WEAPONS AND NO EVIDENCE FOR
COMBAT TRAUMA

Most of the graves within this category are usually described as 'warrior graves'. The majority of the most famous examples are from Grave Circles A and B at Mycenae (Mylonas 1973; Schliemann 1880), the so-called Cuirass Tomb at Dendra (Åström 1977) and some of the Late Minoan graves at Knossos (Evans 1905; Hood 1956; Hood and de Jong 1952).[1] Most of these graves yielded large numbers of weapons, including swords, spearheads, daggers, arrowheads and

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[1] It should be noted, however, that no proper osteological analysis has yet been undertaken for most of these burials.

even some defensive equipment such as helmets, greaves and armour. Although most of these weapons were found in association with male burials, the designation of these as men as real warriors is far from straightforward.

The first problem is that most, if not all, of the skeletons which have been examined show no evidence of weapon-inflicted injuries. A recent re-examination of the skeletal remains from Grave Circle A at Mycenae, for example, has shown that none of the male burials exhibits clear evidence of weapon-related trauma (Dickinson et al. 2012: 181; Nafplioti in press). Having said that, most of these individuals seem to have died young (in their mid-thirties) despite their overall good health. So a sudden, even violent, death is not out of the question. It should be noted, therefore, that even though there are no signs of weapon-inflicted injuries on the skeletons, these people could have died from lethal injuries to soft tissue which would have minimal or no effect on the bones (Dickinson et al. 2012: 181; Nafplioti in press). As Molloy (2010, 2012: 121) has recently pointed out, bladed weapon attacks in the Bronze Age would have targeted soft tissue areas, making them less visible in the osteological record.

The second problem is that of the age of the individuals. Research has so far shown that not all of the burials with weapons were of adult men. Burial II at Sellopoulo Grave 4 at Knossos, for example, was clearly a juvenile. The deceased was nonetheless accompanied by an elaborate bronze sword, more than 70 centimetres long, a bronze dirk and a knife (Popham and Catling 1974: 202–203, 225–229). A similar situation is encountered at a Middle Helladic grave from Tumulus E at Argos (Protonotariou-Deilaki 1980: 115–116). The skeleton of a young boy, aged about six years, was accompanied by an impressive bronze sword, more than 80 centimetres long, and two small bronze knives. It can be surmised that the presence of weapons in these child burials would symbolize both the class or rank which the children were born into, but also the power they were intended to have in life.

Lastly, the weapons themselves can tell us a few things. Some of the swords, especially those from the Shaft Graves at Mycenae, are so elaborately fitted with golden hilts and other precious materials that they would have been impractical, if not inefficient, to use in battle. It becomes clear, therefore, that these weapons were buried with their owners not strictly for their value as actual implements of war, but more as symbols of authority and status. This is re-enforced by the presence of other artefacts such as mirrors, tweezers, razors and jewellery that all fall within the 'warrior's package' (Treherne 1995). However, the weapons in some burials do seem to have been functional because they show evidence of resharpening (e.g., the Type Fii sword from Tomb 95 at Zapher Papoura) (Molloy 2010: 412, n. 82).

In the Bronze Age, as in later periods, being a male member of the aristocracy usually meant being a 'real man'. A 'real man' meant being identified as a warrior. Therefore, burials with weapons were 'a means by which a nexus of

associations between masculinity, prowess in battle and political authority could be re-affirmed, an honour bestowed as much on those who had inherited the status of warrior as on those who had earned it' (Whitley 2002: 220). As a result, the male members of the elite had to portray themselves as competent warriors in possession of numerous and elaborate weapons, even if they had never participated in battle. Of course, that does not necessarily mean that all those buried with weapons had never fought in their lifetime. As we have already seen, there are cases of individuals buried with weapons who exhibit combat-related trauma. Moreover, archaeological evidence suggests that young elite males must have undergone rigid physical training in preparation for war. As Molloy (2012: 89) recently argued, in Bronze Age Crete, for example, this training could include competitive displays of fitness such as boxing, hunting and bull-leaping. Such activities are widely accepted as training grounds for the 'handling of weapons, maintenance of physical fitness, personal bravery, stealth, tactical decisions and the negotiation of rough terrain' (Morris 1990: 150).

BURIALS WITH EVIDENCE OF COMBAT TRAUMA BUT NO WEAPONS

It is a kind of a paradox that in some burials that exhibit combat-related injuries, the deceased are not accompanied by weapons. In 2009, Susan Smith published the results of her re-examination of the skeletons from a Mycenaean cemetery in the Athenian Agora which had been excavated in the early 1930s (Smith 2009). Some of the burials were accompanied by weapons and some were not. Her analysis, based on earlier osteological research undertaken by Angel (1945), showed that none of the individuals accompanied by weapons had any evidence of combat-related trauma or injury. However, three burials that had no weapons interred with them showed evidence of weapon-inflicted wounds.[2] The first was a middle-aged male, more than thirty-five years old, who had a healed 'rounded wound depression in the right posterior rim of the joint socket of the right shoulder-blade' (Angel 1945: 297). This may have been the result of an arrow or spear thrust from behind. Moreover, this man had a healed fracture of the right radius which, according to Angel (1945: 297), might be the result of a direct force being applied during a fight. Although Smith (2009: 105) agrees with the scapula trauma being inflicted by a weapon, she questions that the injury to the radius could have been the result of a fall with an outstretched arm.

The second case is a young male, aged between seventeen and nineteen years. His skeleton exhibits three head wounds: two of them healed and one

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[2] It should be mentioned that all these burials were disturbed in antiquity, so we do not know if the lack of weapons is the result of plundering or an original absence.

perimortem – the latter most likely being the cause of death. The healed fractures have smooth margins with no evidence of infection. The unhealed fracture was a circular depression with small bone fragments in place indicating that it occurred while soft tissue was still intact (Smith 2009: 106). Smith suggests that this young male was involved in combat at least twice in his life. The healed wounds are consistent with sword or dagger wounds, while the unhealed, and most probably fatal wound, is consistent with an injury from a sling bullet.

The third case is somewhat problematic and should be treated with caution because the wounds on the left-hand metacarpals of the deceased do not seem to be the result of weapon blows. Angel (cited in Smith 2009: 106), however, attributed them to 'Mediterranean hand-to-hand combat'.

Weapon trauma on people most likely buried without weapons also occurs on Crete. One such case comes from the site of Armenoi, where one individual seems to have met a very violent death. The deceased was about twenty-five years old, fairly tall and robust. On several parts of the body (arm, thigh and shins), there are some ten cut marks which must have been caused by blows from a sharp, heavy instrument: probably an axe. His right hand was completely severed at the middle of the forearm. It has been suggested that his premature and violent death was the result of a duel or murder, although execution or even torture cannot be excluded (McGeorge 1984: 12–16; Molloy 2012: 120).

Another site from Crete, Aghios Charalambos, tells us a slightly different story.[3] Among the remains of at least 400 individuals, sixteen crania exhibited distinct trauma: eleven males and five females. McGeorge (in Betancourt et al. 2008) has suggested that many of these injuries were inflicted during deliberate attacks. Many of the injuries are on the frontal (nine) or on the left parietal (six), 'consistent with an instinctive rightward turn of the head to avoid a missile or a blow from a right-handed assailant' (Betancourt et al. 2008: 581). The fact that both male and female crania exhibit weapon wounds supports evidence from habitation-site destructions that settlements were potential targets in times of war. Some of these injuries could be the result of an axe strike to a head or the result of sling-stone impacts. A female cranium, for example, exhibits a fractured frontal bone. The woman sustained a blow to the left side of the forehead above the orbit, perhaps inflicted by a blunt instrument (Betancourt et al. 2008: 581, fig. 19). A male cranium exhibits three wounds: one on the left parietal and two on the left frontal lobe (Betancourt et al. 2008: 588–590, figs. 35–39). All three injuries may have been inflicted by an attacker (or attackers) who delivered three separate blows. Two of the wounds could have been the result

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[3] The site of Aghios Charalambos consists of a cave ossuary used for the secondary burial of human remains dating from the Final Neolithic to the Late Minoan period. However, the vast majority of the retrieved pottery dates to the Early Minoan III–Middle Minoan IIB period (Betancourt et al. 2008).

of sling-stones, while the third was caused by a sharp pointed instrument with a stem, square in section. More head injuries caused by sharp-bladed weapons were recorded at Aghios Charalambos, potentially from spear, dagger or sword attacks. One male cranium, for instance, has an incision or cut mark over the midline of the forehead which was caused either by a knife or the tip of sword/ dagger, possibly even an arrowhead that caught the victim obliquely from his left side (Betancourt et al. 2008: 582, fig. 22).

So what can we say about all these people who seem to have suffered weapon wounds but were not buried as warriors? As they were most probably not members of the higher echelons of the society, the answer should lie somewhere between the following: (a) they were the less heroic rank and file, people who were called to arms whenever deemed necessary, or (b) they were simple civilians who met their end during a conflict – the collateral damage of warfare. Scholarship has shown that the Aegean Bronze Age was indeed a period during which conflict and violence were prominent features of everyday life (Georganas 2010; Molloy 2010: 422). Wars were mounted, although we cannot be sure of their scale. It is most probable that most conflicts were low-scale, having the form of raiding expeditions, territorial incursions and so forth (Molloy 2010: 422). Whatever their scale, such operations needed enough men-at-arms to be successful. The Bronze Age polities would most likely have enlisted civilians to fight in these wars, people who were not professional soldiers or members of a warrior elite. These individuals could have acted as members of the light infantry or as some sort of skirmishers who fought almost naked, carrying only their weapons. There are several depictions of such light troops, the earliest being the so-called Siege Rhyton from Grave Circle A at Mycenae (Hiller 1999). As its name denotes, the rhyton depicts the siege of a fortified settlement where several naked figures, carrying bows and slings, were fighting alongside better equipped warriors.

When these 'armed commoners' died, they were not buried with weapons and/or armour because they were not members of the elite, a group that cherished and thrived through a warrior ideology. We could therefore say that these people were the rank and file of the Bronze Age armies who fought and died for their leaders. If this suggestion is valid, then it is of paramount importance because scholarship has so far argued that these lower status warriors or soldiers are invisible in the funerary record (Driessen and MacDonald 1984: 66; Smith 2009: 100).

At this point, it should be noted that this inverse relationship between the presence of weapons in burials and the presence of weapon injuries is not only an Aegean Bronze Age phenomenon as it has also been attested in totally different archaeological contexts. Early Anglo-Saxon burials in England, for example, have shown this pattern of adolescents buried with weapons, too young to effectively use them, while osteological analysis has documented

combat-related trauma in individuals buried without weapons and armour (Härke 1990). Härke (1990: 43), who has thoroughly studied those burials, concluded that the Anglo-Saxon weapon burial rite was a symbolic act and not a reflection of a real warrior function. It was the ritual expression of an ethnically, socially and perhaps ideologically based 'warrior status'. As we have seen, a similar thing occurred in the Bronze Age Aegean. It is interesting to note that weapons and depictions of warfare occupied a wide range of symbolic roles in Aegean art, both in secular and religious settings (Molloy 2012). In this sense, weapons and warfare imagery were an important part of the symbolic and religious grammar of Aegean societies. So, the inclusion of weapons in elite graves fits well with the need of the male members of the aristocracy to portray themselves as capable leaders both in the secular and religious sphere.

CONCLUSION

As a conclusion, I would like to make three points: firstly, a plea to stop calling every single grave with weapons a 'warrior grave'. As we have seen, the presence of weapons is less than a clear indicator about the martial status of the deceased as it most likely had a symbolic character. I would therefore suggest that we start referring to such graves simply as 'graves with weapons' or 'burials with weapons'. Secondly, I believe that more attention should be given to the osteological material. Bones do tell stories, and, in some cases, they can tell very interesting tales about life, war and death (as in the case of the young man from Armenoi). As Nafplioti (in press) has recently put it, 'Skeletal injuries may provide direct evidence for violent confrontations that could be a) of smaller scale, meaning inter-personal conflicts and violence, or b) reflect full-scale warfare involving larger, more organized groups, often with more elaborate fighting methodologies and technologies. They could however be accidental.' Therefore, human skeletal remains from older excavations must be carefully re-examined, stricter retrieval methods of osteological material must be employed by current excavation projects and osteological examination and publication of the results must become top priority for fieldwork project directors. Of course, this is not a panacea because we have already seen that a lot of the weapon-inflicted injuries would have targeted soft tissue and therefore left little or no trace on the bones. Lastly, we also need to start looking closely at other evidence, such as the presence (or absence) of combat-related damage on the weapons themselves. So far, very little has been done in this field in the Aegean. Understandably, in many cases, this is not feasible due to the fact that the edges are preferentially corroded due to their thinness. Having said that, a more careful and systematic examination of the weapons is likely to provide us with further valuable information.

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CHAPTER THIRTEEN

THE CHIEF AND HIS SWORD? SOME THOUGHTS ON THE SWORDBEARER'S RANK IN THE EARLY NORDIC BRONZE AGE

Jan-Heinrich Bunnefeld

INTRODUCTION

It is often stated that the sword was a weapon and a status symbol of the leading men in society – the Bronze Age chiefs (e.g., Kristiansen 1984; Kristiansen and Larsson 2005). Nevertheless, is this the case, or is it also possible to interpret the data differently? My aim is to give some thoughts on the possibility of seeing the swordbearers in the Early Bronze Age of South Scandinavia and northern Germany (Periods II–III) in another way, as free and independent men with their own farmstead who were patriarchs of their kin group. Of course, there

are differences in status, but they seem to be of a gradual rather than a sharply defined nature.

THE FUNCTION AND MEANING OF THE SWORDS

Similar to other parts of material culture, swords have more than one meaning and function which are ambiguous, changeable and depend on their context (Hahn 2005: 122–128) (Fig. 13.1). They normally incorporate different spheres: it was likely practical as a weapon mainly against other humans; socially, it was an object of status; and symbolically, it was a sign of martial ideas. Some swords may also have been considered as things with a significant biography or a will of their own (Bunnefeld 2012).

With practicality in mind, it is important that the hilts are not too short because the sword lies well in hand when the hand covers the whole hilt and its shoulders (Kristiansen 2002: 320–321). Bronze Age swords are normally
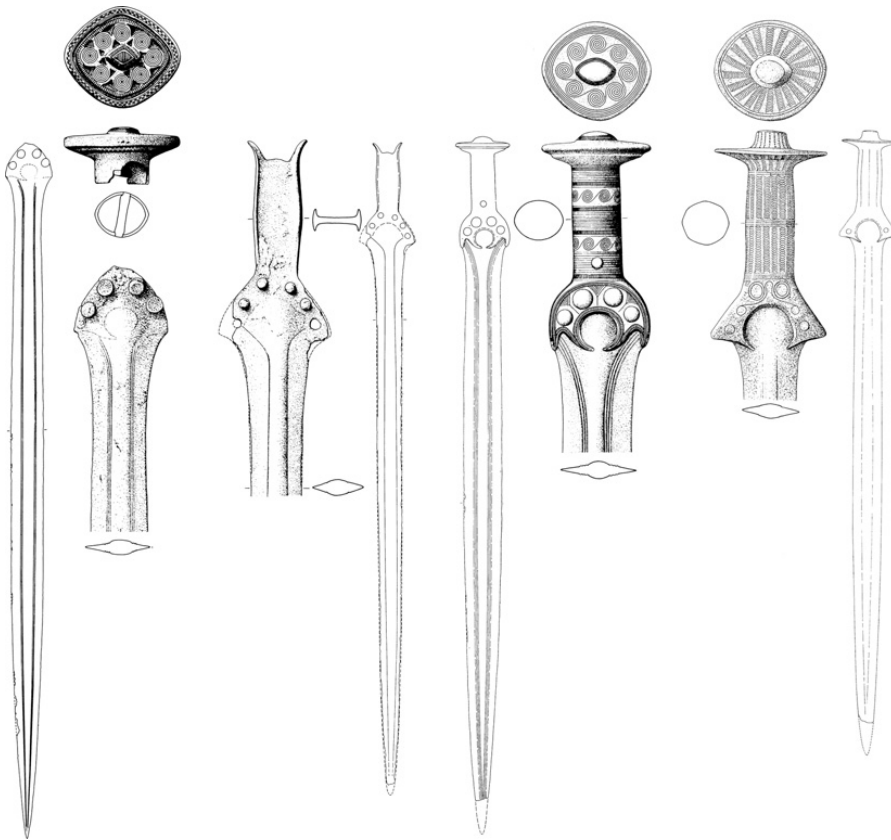
13.1: Different Period II sword types from the Nordic area: plate-hilted sword, flange-hilted sword, Nordic full-hilted sword, octagonal-hilted sword. (Ke 771, Ke 761, Ke 771, Ke 707: Aner and Kersten 1976: pl. 20, 27, 29, 30.)

not supposed to perform powerful strokes, but are rather well-suited for cutting. A clear division between weapons for thrusting and stabbing is neither possible nor helpful (Molloy 2011: 74–75). The material used to produce the swords in Lower Saxony and Mecklenburg-Western Pomerania was tin-bronze with about 10 per cent tin, making it suitable for functional weapons (Bunnefeld and Schwenzer 2011: 227–232; Riederer 2004). However, how these swords were treated after casting in the Nordic area still has to be studied.

Hilts were mounted to blades with rivets. In Period II, there are different possibilities for how the end of the blade, which is fixed into the hilt, could be shaped. The blades of Nordic full-hilted swords end in plates, flanges or tangs, whereas in almost all octagonal-hilted swords of South Central European origin there are flanges wedged into the hilt. In Period III, the blades of Nordic full-hilted swords were fixed to the pommel with a tang. Altogether, the mounting of swords with metal and organic hilts can be considered sufficient for a functional weapon.

Even though Early Bronze Age swords were functional weapons, we must look at the use-wear to see if they were actually used. Unfortunately, the swords discussed here are usually in a very bad condition and are broken and highly corroded.

As a result, on more than half of the blades, it is impossible to detect, for example, edge damage, and, even if it is possible, use-wear is difficult to date and interpret correctly. Bronze Age fighters certainly knew the limits of their weapons and therefore tried to avoid edge-to-edge contact (Molloy 2011: 76–77). Simple edge damage was often repaired by hammering and is therefore not visible in the archaeological record (Siedlaczek 2011: 118). Nevertheless, about 8 per cent of the studied full-hilted swords and daggers from Period II and 3 per cent of those from Period III show some edge damage, such as notches and nicks, which might date to the Bronze Age (Fig. 13.2).

Some of the worn-out hilts were discovered in bogs and therefore have faint or no ornaments on the surface (e.g., Ke 575, Ke 831). Nevertheless, about 22 per cent of the hilts (Periods II and III) that were in a good enough condition to study this detail show that the ornaments in the parts stressed by handling had mostly been rubbed away. Whether the many damaged hilts of Period III were heavily worn-out (Kristiansen 1978: 161–163) or if their state was instead related to corrosion of the very thinly cast walls is something which needs discussing.

Resharpened blades are somewhat easier to detect, and a resharpening at such an intense level implies that the blade was seriously damaged (Thrane 2006: 495–496). Such traces are observable on 26–27 per cent of the sufficiently
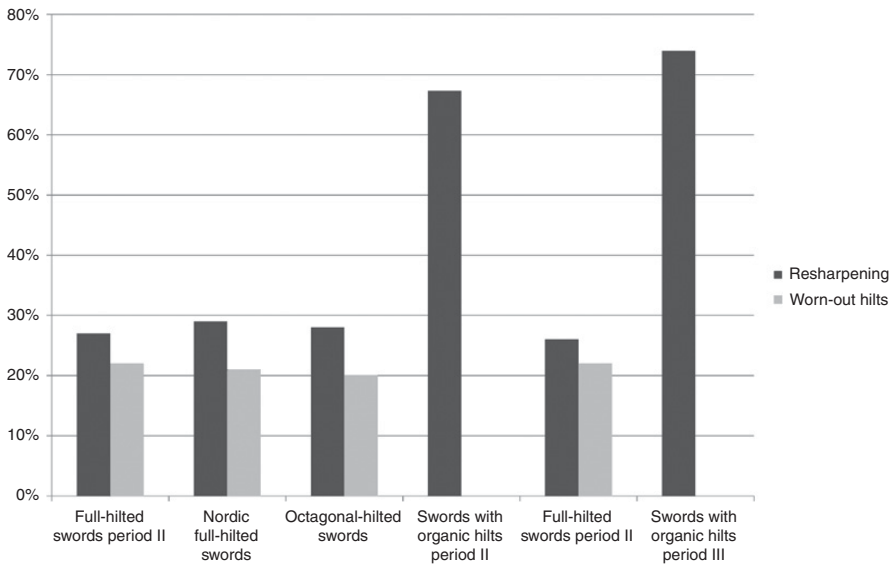
13.2: Numbers of swords with edge damage, resharpening and worn-out hilts. (Including full-hilted swords, from Nationalmuseet, København; ArchäologischesLandesmuseum, Schleswig; Moesgård Museum, Århus; Museum Sønderjylland, Haderslev; Roskilde Museum, Roskilde; for swords with organic hilts cf. Kristiansen 1984.)

preserved blades with no noteworthy discrepancy between Periods II and III. There is also no observable difference between Nordic full-hilted swords and octagonal-hilted swords. Of the swords with an organic hilt from the Danish Isles, Kristiansen (1984) determined that 71 per cent were resharpened. Another study is required to determine whether these differences in use-wear patterns apply to the whole area of the Nordic Bronze Age or only to the Danish Isles. Even though the possibility of blade changes has to be considered for the full-hilted swords (Willroth 1999: 54), it seems that there may be a difference in using full-hilted swords and swords with an organic hilt. But, given the use-wear, there is little doubt that full-hilted swords – both Nordic and octagonal-hilted – were used practically, likely for fighting.

The social function of swords probably included a role as symbol to show, for example, status, age or gender. To act as such a status symbol, an object must be visible and understandable for the people the message is addressed to. Symbols of elite status have to be more or less rare and exclusive, be they material or nonmaterial. In addition to the material, the complexity of crafting, ornamentation and find context could offer some hints to the object's importance (Burmeister 2003: 276–277, 292).

The quantity and exclusiveness of swords will be discussed later. The visibility of swords inside or outside their scabbards at the belt or hanging

from the shoulder is obvious. Swords are among the heaviest Bronze Age metal objects; in the north, they were produced from imported bronze. The metallic glance, the sound or the 'exotic' origin of the bronze could have been significant. In addition, one must keep other rare ornamentation materials like gold or amber (commonly very rare on Nordic Bronze Age objects) in mind. The crafting of an entire sword, including the sometimes organic hilt, scabbard, belt and so on, was clearly time-consuming, complex and required different crafting knowledge (Jockenhövel 2011: 5–7, 11).

Even when the meaning of the ornamentation of metal sword hilts is ambiguous, it is an argument for their social importance. Nearly every Nordic sword is quite individual and unequal in quality (cf. Ottenjann 1969). This may represent a gradual hierarchy within the group of swordbearers. Nevertheless, a clear difference between highly ornamented metal-hilted and simple organically hilted swords may not be the case because there are also examples of well-preserved and ornamented organic hilts (Fig. 13.3).

The reconstruction of an exact symbolic or mythological meaning of Bronze Age swords is of course impossible due to the missing social context (Burmeister 2003: 272–273). Nevertheless, it seems probable that many swords as representations of martial ideas had a significance beyond their practical and social function, as seen in later times (e.g., in epics and legends). Some of the

Horn oder
Knochen

Goldblech

Goldblechreste

Horn

alte Skizze
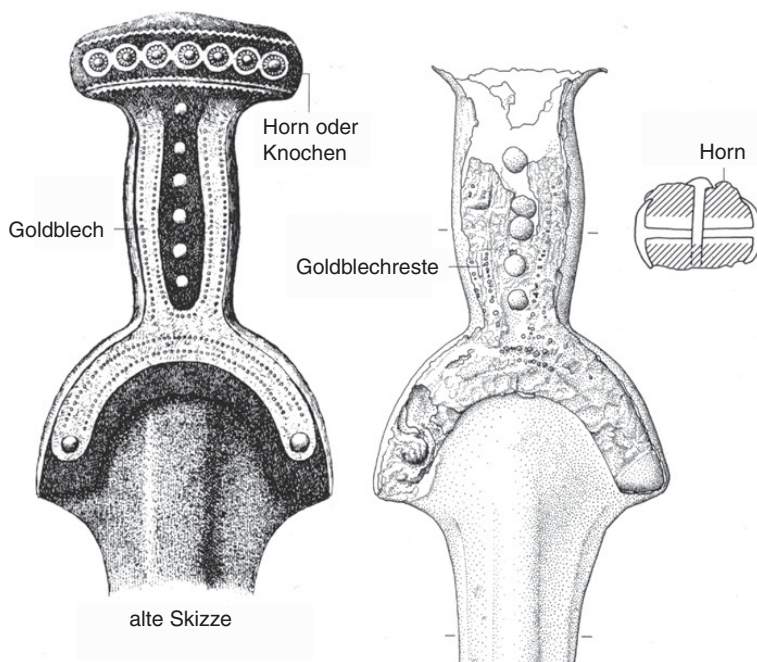
13.3: Highly ornamented organic hilt of a flange-hilted sword from Muldbjerg, Ringkøbing Amt. (Ke 4740 A: Aner and Kersten 1995: pl. 31.)

swords may have had their own names, famous biographies or wills of their own (Kristiansen 2002: 329–331). They might also have been perceived as part of the warrior's body (Treherne 1995: 128).

THE FIND CONTEXTS OF THE SWORDS

About 83 per cent of the full-hilted swords from Periods II and III with known find contexts were located in barrow graves. Most male burials, which contained some form of grave goods, also imply a sword (Ille 1991: 8287; Steffgen 1997/1998: 169). Obviously, it was an important symbol and essential for their social role and identity. Burials do not represent the society of the living exactly, but are created and influenced by different social, religious and ritual aspects. Nevertheless, they certainly contain some information about their society (cf. e.g., Hofmann 2008: 123–165).

Despite the fact that most skeletons had totally decayed or did not survive due to prior discovery, we can assume that most swordbearers were indeed male. This is reasonable because, in all of the few cases where we know the sex of a buried person with a sword, it is probably a man. Furthermore, a clear difference between male- and female-associated objects in graves is observable (cf. Ille 1991; Steffgen 1997/1998). Of course, it is not completely impossible that there were female swordbearers in particular cases.

At first, we will consider the possible differences among burials with swords in them. Kristiansen (1984: 199–204) suggests that the male graves from the Danish Isles demonstrate a regular division in richer burials of ritual chiefs with Nordic full-hilted swords and other graves of warrior chiefs with octagonal-hilted and flange-hilted swords. Unfortunately, a correspondence analysis of all swords and daggers and their associated finds from the Danish Isles does not show significant results because too few of the finds have a secure find context. He writes that Nordic palstaves and gold objects are more or less restricted to Nordic full-hilted swords and related sword types (e.g., in German, so-called *Scheibengriffschwerter*) and are normally not associated with octagonal-hilted or flange-hilted swords (Kristiansen 1984: 199–201). Denmark and Schleswig-Holstein indeed also demonstrate such a tendency, but it has to be questioned whether this pattern is due to the various sword types or simply to the general wealth of the graves containing them (Fig. 13.4). Graves with octagonal-hilted and flange-hilted swords typically include fewer grave goods (on average two objects in Period II) in comparison to those with Nordic full-hilted swords (on average three objects in Period II). With this in mind, Nordic palstaves and gold objects appear (according to a statistical chi-squared test, which fails to reject the null hypothesis at the significance level of 5 per cent) to be simply more frequent in richer graves (cf. Thrane 2006: 500–501).

	Gold object (number)	Gold object (%)	Nordic palstave (number)	Nordic palstave (%)
Octagonal-hilted sword (*n* =149)	3	2	5	3.3
Flange-hilted sword (*n* =195)	8	5.1	7	4.1
Nordic full-hilted sword or related object (*n* = 448)	32	7.1	40	8.9
Chi-squared value	2.48		3.27	
Degree of freedom	2		2	
Critical 5 per cent value	5.99		5.99	

13.4: Combination of different Period II sword and dagger types with gold objects and Nordic palstaves in Denmark and Schleswig-Holstein and the results of chi-squared tests. (Numbers from Ke.)

Remarkably, there are no swords in the extraordinary graves from Kivik, Skånelän, and Gyldensgård, Bornholms Amt (Ke 1548 A). Here, we obviously see elite male burials without swords (Randsborg 2011: 165). A further argument against a clear division of social groups along the sword types are the folding chairs, which are also commonly seen as high-status objects and are associated with all sword types except for octagonal-hilted swords (Fabian 2009: 117–120). The fact that the very rich burial from Period III, with a gold arm ring and the famous bronze-wheeled cauldron, from Skallerup, Præstø Amt (Ke 1269), contains a flange-hilted sword is also a reason for doubt. Another example is the case of Gönnebek, Kr. Segeberg (Ke 9897B), where, among other finds, a flange-hilted sword was accompanied by a gold bowl and a gold bracelet.

Furthermore, no differences in terms of find contexts between Nordic full-hilted and octagonal-hilted swords occur (Fig. 13.5). About 85 per cent of both sword types are known from graves, while nearly 15 per cent were found in hoards and as single finds. Most of these should probably also be interpreted as single-piece hoards (Willroth 1985: 21). Since some of these swords show apparently unrepaired damage at the edges (e.g., Ke 52 and Ke 831), they were possibly put down directly after battle (cf. Kristiansen 2002: 329). However, from this perspective, there is no evident difference in the treatment between either sword types.

THE NUMBER OF SWORDS AND SWORDBEARERS

How many swords existed and how many men owned such a weapon? Naturally, this question is crucial for the assumption that swords were exclusive elite objects. Of course, the following model (Fig. 13.6) should not be understood in terms of definite calculations, but more in terms of educated guesswork to determine which interpretation models can claim a certain probability.

Nordic full-hilted swords

Octagonal-hilted swords

- ■ Burial
- ■ Signal find
- ■ Hoard

- ■ Burial
- ■ Signal find
- ■ Hoard
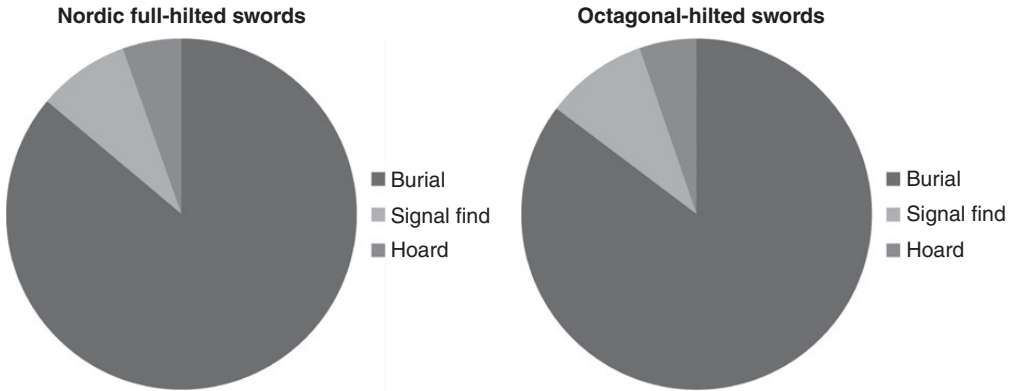
13.5: Find contexts of Nordic full-hilted swords and octagonal-hilted swords in Period II. (Numbers from Ke.)

Number of swords in Period II	1,057
Number of daggers in Period II	491
Number of swords in Period III	1,040
Number of daggers in Period III	366
Swords used simultaneously in Period II	622–31,088
Daggers used simultaneously in Period II	289–14,441
Swords used simultaneously in Period III	452–22,609
Daggers used simultaneously in Period III	159–7,957
Minimum population number	117,794
Maximum population number	294,485
Minimum percentage of men with swords	4.6–14.0 per cent

Maximum percentage of men with swords, 11.6–35.3 per cent. Percentage of men with swords in the Flintbek barrow group, 11–21 per cent.

13.6: Basic data for estimates of the number of swords and swordbearers.

It is based on assumptions and parameters which must first briefly be defined (for more detailed estimates, cf. Bunnefeld 2013).

Beginning with the absolute numbers of swords known in Denmark and Schleswig-Holstein, we have to consider how many of the swords existing in the Bronze Age were put into burials or hoards and how many have been destroyed by agriculture, grave robbery and so on. Incidentally, all unpublished swords in museums, the majority of swords with unknown provenance, and swords which are not datable to a single period have to be added to the presented numbers, which therefore represent an absolute minimum. According to estimates by Kristiansen (1985: 121–124), the excavated burial finds represent about 10 per cent of all known burial mounds. Therefore, a cautious estimate is that we may know at most 1–3 per cent of all Bronze Age swords that existed in the North. The average use life of swords, which is appointed here to 10, 20 or 50 years, and the duration of the Periods II

(170 years) and III (230 years) are also of some interest here (Hornstrup et al. 2012: 48). A calculation of the number of simultaneously used swords in the Nordic Bronze Age of Denmark and Schleswig-Holstein via the common formula for estimating living populations based on cemeteries is then required (Acsádi and Nemeskéri 1970: 65–66).

The next important step is to consider how many people lived contemporaneously in this region. There are several different population models: Poulsen (1983) calculates the population based on the carrying capacity of all possible natural resources. He therefore suggests between 1.9 and 6.4 persons per square kilometre. As a reasonable number of inhabitants, he proposes five persons per square kilometre and calculates a total of 200,000 people for Bronze Age Denmark. Together with Schleswig-Holstein, we then have to imagine nearly 300,000 people. If this is the case, not even half of the population were given an archaeologically visible burial. Matching this, Kristiansen (1985: 125–126) and many others regard the people buried in burial mounds as some kind of elite. However, there is also another option: in modern excavated barrows there are often more burials discovered, a significant number of which are without any bronze or artefacts at all (e.g., Zich 2005) than in the very large number of previously excavated barrows. New studies in landscape archaeology also show the importance of considering regions without settlement, even in regions which are favourable for settlement activities, and the separation of 'local' and 'global' population densities (Wendt, Hilpert and Zimmermann 2012; Zimmermann et al. 2009). Extensive calculations for the Rhineland in Western Germany show that the global population density in the Pre-Roman Iron Age was about 0.9–1.8 persons per square kilometre in the Lower Rhine area (Wendt et al. 2012: 228–235), which is the part of the Rhineland that is probably most environmentally comparable to the Nordic region. Fittingly, some areas, such as the inner parts of Zealand (Jensen 2006: 104–109) where apparently very few people settled during the Bronze Age, can be seen here. In case of a lower global population density in the North, there would not be such a great gap between known and expected graves, meaning that we would not have to imagine large parts of the population not being visible in archaeological sources despite the tens of thousands of burial mounds known (Jensen 2006: 144–147). Finally, with two persons per square kilometre, we can propose nearly 120,000 inhabitants for the whole region.

In conclusion, for Period II, if we imagine a sword was used for an average of twenty years (approximately one generation) and that there were 300,000 inhabitants, then 5 per cent (assuming we know about 3 per cent of all swords that ever existed in the Bronze Age) to 12 per cent (assuming we only know 1 per cent of the swords) of all adult men would have had a sword. If there were only 120,000 inhabitants, the percentages range from 14 per cent to 35 per cent

of all adult men. The proportions decline somewhat in Period III. These estimates show that at least every twentieth man or at most every third man had a sword; we could probably suggest that every tenth to fifth man was a swordbearer. This agrees with a recently excavated barrow group in Flintbek, Kr. Rendsburg-Eckernförde (Zich 2005; Ke 9593–9608), where about 11–21 per cent of the buried men in Period II had a sword (Bunnefeld 2013: 421–422).

THE CHIEF AND HIS SWORD OR THE FREE MAN AND HIS SWORD?

The first part of this chapter showed a possible differentiation in use between swords with organic hilts and those with metal hilts. Despite this, full-hilted swords were certainly used as weapons, and there was no difference in use between Nordic full-hilted and octagonal-hilted swords; furthermore, the division in ritual and warrior chiefs is not significant. In addition to the practical weapon function, swords most likely also fulfilled a social function as a status object which had a symbolic meaning that is now impossible to characterize in detail.

In the second part, potential regular differences in the find contexts of various sword types were tested. So far, there are no significant differences except for the fact that, on average, Nordic full-hilted swords are found in burials with more grave goods than other sword types. In terms of find contexts, Nordic full-hilted and octagonal-hilted swords are equal.

The third part presented estimates on the number of Bronze Age swords and swordbearers that suggested that there were probably more than expected. During Periods II and III, between 10 and 20 per cent of adult men in the Nordic area could have been swordbearers.

All this suggests that the common connection between chiefs and swords is just as questionable as the distinction between ritual and warrior chiefs. It seems more likely to perceive swords not only as weapons and status objects of so-called chiefs, but also of free and independent men, likely peasants with their own farmstead who were patriarchs of their kin (cf. Willroth 1999: 60).

However, this different view does *not* mean that the Early Nordic Bronze Age society was uniform and that there were no differences between groups or people. Striking variation in the quality of swords and the fact that graves with Nordic full-hilted swords are richer than others on average are indeed arguments for social inequalities. Similarly, great differences in house sizes (from 100 to 500 square metres) and the dimensions of burial mounds (up to a diameter of 71 metres) point in the same direction (Jensen 2006: 116–118, 158–160, 220–227; Kristiansen 2007: 67–68). There must have been social groups, maybe lineages, of higher status than others, maybe due to wealth or

reputation or both. All these principally independent segments of society had many kinds of relationships to each other (e.g., kinship, marriage, dependence, alliance, hospitality, retinue, but also hostility, feuds and raids). Altogether, Kristiansen (2007) seems correct when he suggests that the Nordic Bronze Age society consisted of a complex and unstable network of decentralized power with more or less rich and mighty social groups competing. However, a strict division between 'chiefly clans' and 'commoners' is not clear – there appear to be far more gradual differences in status.

While these power struggles and other kinds of conflict were likely often carried out with peaceful means (e.g., negotiations, gift-giving, marriages and rituals), they would almost certainly have sometimes resulted in conflicts and violence. This may have been an effective strategy for group interaction in certain circumstances since there was no stable central power, and the resources for subsistence were at least partly locally concentrated (Helbling 2006).

Rather small warrior bands should be suggested for the Nordic Bronze Age instead of large armies. They probably consisted of armed men of one or more of the social groups mentioned, but their exact organization is difficult to determine (cf. Harding 2007: 149–169). In addition to the swords, and probably more important in numbers, weapons like clubs, axes, spears and bows were certainly significant (Thrane 2006). Regarding the settlement structures, including unfortified single farms and no larger settlements or fortifications (Jensen 2006: 109–120), it seems likely that there were fast actions and raids with only a few larger campaigns. The notion that many of the ships shown in Scandinavian rock art may be war canoes similar to the Pre-Roman Iron Age boat from Hjortspring, Sønderborg Amt, is interesting in this respect. On average, the Early Bronze Age vessel seem to have six to fourteen crew members on board, but there are also larger ones with thirty to sixty crew members. To some extent, these images might depict maritime warfare (Ling 2012). In line with this are some of the recently discovered rock art pictures from Medbo, Bohuslän, where twenty-four pictures of swordbearers along with a probable killing scene featuring a man stabbing with a spear another man holding a club are shown (Toreld 2012).

Finally, it is uncertain how violent and brutal Bronze Age fighting actually was. It is often stated that there was predominantly ritual combat (cf. Harding 2007: 115–118, 145–147). While this may have occurred to some extent, we know of skeletal evidence which confirms deadly violence in the Nordic area despite the mostly bad conditions for the preservation of bones in the sandy soils of South Scandinavia. In Wiligrad, Kr. Nordwestmecklenburg, the skull of a male (about thirty years old) from Period II was found with trauma perhaps caused by an axe (Lidke and Piek 1998: 82–83; Peter-Röcher 2007: 215 no. 174). Then there is also the so-called battlefield in the Tollense Valley

from Period III where the remains of at least 120 individuals, mostly young
adult men, were discovered: 6–9 per cent of them have lesions mainly caused
by blunt force or arrowheads. About half of the injuries were survived for
a longer period of time (Jantzen et al. 2011; Chapter 10). In Over Vindige,
Præstø Amt, the pelvic bone of a mature man from Period I was found with
a fragment of a spearhead in it: he survived the injury for some years (Ke 1292 I;
Vandkilde 2006: 61). Evidence of a lesion on a skull caused by a sword cut
comes from a barrow in Hvidegård, Københavns Amt (Ke398), also dating to
Period III (Goldhahn 2012: 246). Two more examples of violence are known
from Norway: in Sund, Nord-Trøndelag, skeletal remains of at least twenty-
two Early Bronze Age individuals, apparently children, juveniles and adults of
both sexes, were excavated. Seven adult individuals show traumata on the
lower arm, leg, lower abdomen and head that were likely caused by spears, axes
and swords; in four cases, they had healed. An adult man died from two lesions
possibly caused by a spear, and another adult individual was killed by what may
have been a sword (Fyllingen 2003: 28–36; Peter-Röcher 2007: 150–151, 214
no. 163). A random find dating to the Early or the Late Bronze Age (^{14}C date:
1105 ± 165 cal. BC) is known from Kråkerøy, Østfold, in which a mature man
was probably killed by a cut to the cranium and a sword cut to a thoracic
vertebra (Fyllingen 2003: 36–37).

To conclude, this evidence – ranging from the high number of swords and
other weapons to rock art pictures – shows that the society of the Early Nordic
Bronze Age had a certain potential for violence. Furthermore, use-wear on
swords, recently discovered rock art and, last but not least, traumata on skeletal
remains are proper indications for the occurrence of – at least sometimes
deadly – conflicts and violence between social groups competing in
a network without central power. In this context, the swordbearer can be
perceived as a man of certain status, but not necessarily as a chief.

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CHAPTER FOURTEEN

BECOMING THE WARRIOR: CONSTRUCTED IDENTITY OR FUNCTIONAL IDENTITY?

Kate Anderson

INTRODUCTION

Papers delivered at the 'Warfare in Bronze Age Society' conference clearly indicate that a 'warrior identity' is visible in different forms across Europe during the Late Bronze Age. This chapter will highlight the way in which modern commentators discuss the concept of 'the warrior' in prehistory, the premise being that, currently, this concept is often presented as unproblematic when in fact it is riven with assumptions and a lack of supporting evidence. Not only is a commonality of understanding assumed when the term 'warrior' is used, but there is often a failure to differentiate between the activity of combat and the social role associated with that or to note the multiplicity of roles available to those connected with either. Therefore, this chapter will also suggest how and why the warrior identity might be constructed and presented and how that identity is able to co-exist with other identities within an individual.

Some of the most persistent assumptions associated with the construct of the warrior relate to the gender, skill source and personal identity associated with the role, as well as what are considered the appropriate weapons the warrior should wield. The validity of these assumptions can be assessed by examining bronze weapons and their deposition and the iconographic sources of evidence. The goal here is not to prescriptively specify what a warrior was or was not during this period, but instead to encourage rigorous examination of personal

bias and thus an evidence-based exploration of what they *might* be. In drawing attention to the reality of Late Bronze Age combatants, the opportunity presents itself to discuss why a warrior and a combatant are not necessarily the same thing and how this disjunction could appear.

Finally, this chapter seeks to explore the possible links between various behavioural phenomena seen across Europe at this time and the issue of individuals inhabiting multiple identities. The ritualistic deposition of weapons and the practice of 'killing' weapons prior to deposition were widespread across Europe, despite being statistically rare. Usually discussed in relation to substitution (Gilmour 2007: 32; Osgood 1998: 18; Ralph 2009), it also seems possible that such activity relates to some form of post-conflict cleansing rituals. Should these behaviours relate to the psychological exchange of the dominant identity of an individual or act as a socially required neutralization of combat socialization, much of the bronzework from this period could usefully be reassessed.

REPRESENTATIONS OF WARRIORS

The disjunction between the perception of what warriors 'are' and the more complex possibilities occasionally suggested by a range of sources of evidence is rarely considered. The 'warrior identity' of popular imagination, while rarely explicitly deconstructed, usually conveys several key aspects relating to that individual, perhaps the most dominant of which is their masculinity. Academically, and in popular culture, images of warriors routinely depict them as men. An additional facet of these images are the accoutrements assigned to the warrior, which are usually the highest status objects that can be presented – weapons and jewellery are large and complex, and clothes are of high quality. Not for these individuals the small spear or the organic shield. Therefore, a second aspect is the implication that they are the elite of their social group and that, consequently, they will wield the most high-status weapons – usually assumed to be swords. Here, the aim is to demonstrate that neither the normatively assumed gender or weapon of choice is an absolute given.

It is noticeable that almost all discussion of warriors in the literature (Cunliffe 1995; Harding 2007; Hill 2006; Kristiansen 2002) assume, implicitly or explicitly, solely male participation in combat and present women as the prize of warfare. These assumptions are widespread and pervasive even where the evidence of gender is ambiguous. One such example is the 1961 publication on the rock art of Val Camonica in northern Italy by Emmanuel Anati, which states without explanation that only 4 per cent of the figures shown are women, although Ehrenburg notes that only 60 per cent (rather than 96 per cent) of the figures have representations of a penis (Ehrenburg 1989: 141). Harding (2007: 138) describes iconographic warriors, depicted at both Val Camonica

and at sites in Scandinavia, as 'invariably male', but does not elucidate his thinking. Of the warriors in question, some are rampantly phallic and others gender-neutral. Other authors go further than simply making unquestioned assumptions and ignore specific evidence: Redfern (2005: 330) comments that when male skeletons are found with osteological injuries, it is common practice to consider such trauma as explicit evidence of involvement in combat, but that equivalent injuries to female skeletons are frequently ignored. There is also the implicit assumption in the majority of skeletal studies that skeletons with wounds or skeletons with weapons are male, but only more recent work provides confirmation through definitive sexing of the remains. For example, Stead (1991: 127) was concerned about being 'over-scrupulous' in placing a skeleton in the 'possibly female' category because, although it presented female characteristics, it was buried with a sword and shield. The extent to which analysis is conditioned by the nature of grave goods has considerably lessened since the early 1990s given the widespread recognition that many objects did not always have the same gendered connotations in prehistory as they do in modern society, although the degree to which that recognition extends to weapons is questionable.

Thus, although the assumption of purely masculine combatants is not universally accepted (Osgood, Monks and Toms 2000: 3; Thorpe and Parker-Pearson 2005: 5), it is widely viewed as unproblematic. The aim here is to determine whether Late Bronze Age evidence supports that assumption. Unlike the British Iron Age, which has a range of textual, osteological, iconographic, ethnographic, anthropological and archaeological evidence on this subject to draw on, evidence from the Late Bronze Age is constrained to quite limited iconographic representations and examination of the material culture associated with warfare. The only Late Bronze Age warrior iconography found in northern Britain are the wooden figurines found at Roos Carr in East Yorkshire; these are often considered male, since all five figures have pubic holes drilled into the body which were assumed to have held penises. However, the sex of many similar carvings is ambiguous and such holes could have been intended to represent a vagina, intercourse or the birth process (both of which are connected to the social symbolism of warfare) (Anderson 2011a: 201; Coles 1990: 331). It is possible that the figurines could have functioned as either gender, depending on context. Looking beyond solely British material, contemporary Scandinavian and Iberian iconography is also relatively ambivalent. As previously noted, although some of the figures depicted are rampantly phallic, others are not, which might suggest female involvement. However, while the iconography is not entirely unambiguous, the most reasonable interpretation is that it represents males.

However, accepting the androcentric nature of combat imagery does not necessarily mean that we can make a simplistic connection between male

representation of warriors and all warriors being males – particularly given the ritualistic and religious associations among the phallus, weapons, nakedness and the sacred (Anderson 2011a: 201–206). Even where iconography and burial evidence (where available) are profoundly biased towards masculinity, Hunter (2005: 43, 50) notes that such forms of evidence are deliberate expressions of self or group identity rather than value-neutral forms of data. They are not necessarily a reflection of reality; although women might have participated in combat, neither they nor their male counterparts necessarily identified them with the warrior image.

A more direct source of evidence with regards to combatants are the weapons those individuals used. When the blade lengths of Late Bronze Age northern British swords are plotted on a histogram, the results roughly follow a normal bell curve, although they also show a small 'peak' at the smaller end of the scale.

Given the substantial variation in overall length, it is possible that short swords and long swords were being deliberately manufactured with different fighting styles in mind, much like the Roman gladius and spatha. However, the peak may be viewed as particularly interesting when considered in the light of the possibility of both sexes wielding weapons. A histogram of the height range of a normal male population will follow a regular bell curve, but when both sexes are included there is likely to be a 'double peak' effect if there is a height differential between the males and females of a population (Niall Anderson,
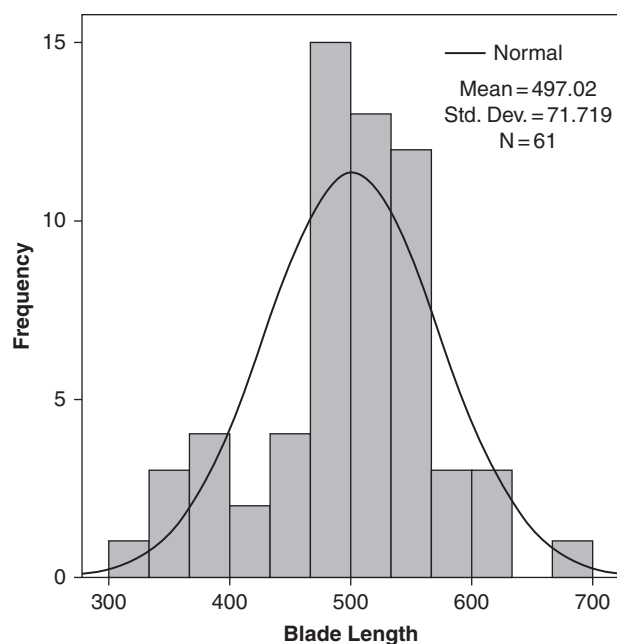
14.1: Distribution of grip lengths of Late Bronze Age swords of northern Britain.

personal communication, 9 August 2011). The small peak here may therefore be indicative of swords made for female use, although, if so, there were clearly a smaller number of female than male combatants. Furthermore, the variability when both grip length and grip length × blade length are plotted suggests that these weapons were manufactured for individuals and also that a mix of genders (or possibly ages) used them.

It is not the intention here to construct a feminist ideal of prehistory by suggesting that gender relations in the Late Bronze Age were a utopia of role equality in which men and women participated equally in all arenas of life. The evidence simply does not support such an interpretation. However, particularly in relation to a topic that is seeing renewed widespread interest and a plethora of exciting new approaches, it is poor practice to make assumptions based purely on modern gender prejudices. The results just presented, and in more detail in Anderson (2011a), suggest a rather more complex picture than simply 'warrior equals man'. Women appear not to have participated in warfare and conflict in equal numbers with men, nor were they identified (by themselves or society) with the 'warrior ethos'. However, the evidence in no way excludes an active, participatory role for women and (in the case of the Val Camonica rock art, for example) may occasionally suggest it.

In addition to questioning the gender focus of warrior identity, a secondary assumption which appears to spring from modern perceptions rather than evidence-based analysis is the assignation of status; in this case, not to the warriors themselves, but to their weapons. A sword is usually considered to be the highest status weapon available to a warrior, either due to the expense incurred by its manufacture, its symbolic importance or the fighting styles necessitated by each weapon (where effectively wielding a sword is thought to require more skill than a spear). In contrast, spears are routinely considered to be 'mundane' (Harding 2007: 166) – where they are considered at all. Assumptions regarding that disparity in status will affect the interpretations developed using weapon finds from sites, hoards or burials, and it is therefore worth determining their accuracy.

When assessed using the weapon populations of Late Bronze Age northern Britain, the reasoning behind the primacy awarded to swords appears to be weak. For example, some of the more complex spears, such as that found at Denhead, Perthshire, would have required far more time, skill and marginally less weight of metal to manufacture than a small, simple sword. Furthermore, despite Underwood's assertion that 'the spear would have had limited use in single combat' (1999: 6–7), Anderson (2011a: 77–107) demonstrated the complexity and subtlety possible with spear use and the training required – as does Pittman (2007) in his discussion of Hoplite use of the spear. It is hard to determine the relative symbolic importance of bronze swords and spears, although avenues of investigation could include

assessing whether the relative numbers of each weapon were affected either by rarity or a high degree of symbolism and examining whether one type of weapon dominates the composition of the symbolically important large hoard deposits. Finally, heavily symbolic weapons might be expected to demonstrate a greater amount of unusual treatment, such as ritualized damage, prior to deposition.

Analysis of the first parameter suggests that the relative status of northern British swords and spears was far more equal than has been assumed. Swords and spears were deposited in almost exactly equal numbers, a total of 221 and 222, respectively. The analysis becomes particularly interesting when the composition of the large hoards (containing at least four or more weapons of the same type) found in northern Britain is examined.

The graph indicates no distinct patterning; clearly, hoards can be dominated by either swords or spears, but where there is a mixture, it is more likely that the hoard will contain significantly more spears than swords. The former point suggests a degree of parity in status and symbolic worth, whereas the latter may be indicative of the composition of an idealized individual's weapons panoply, the status relationship of multiple individuals making a deposit or the value placed on each type of weapon. Furthermore, seven spears (from Thrunton Farm, Birtley and Eslington) were found in similarly highly structured depositional positions as the swords from the Island of Shuna, Thrunton Farm, Eslington and Ewart Park, while some British metal shields, including the northern British Beith shield, were deposited with possibly ritualistically produced spear damage. The equal numbers of swords and spears found in the Late Bronze Age; their relative representation within large hoards; their ritualistic deposition, which is similar to the treatment of swords; and their proposed methods of use (Anderson 2011b) suggest a level of parity in terms of status between the weapons, although there are some indications that swords may have been of greater symbolic value; the ritual 'killing' of weapons prior to deposition was four times more likely to have involved swords than spears. This
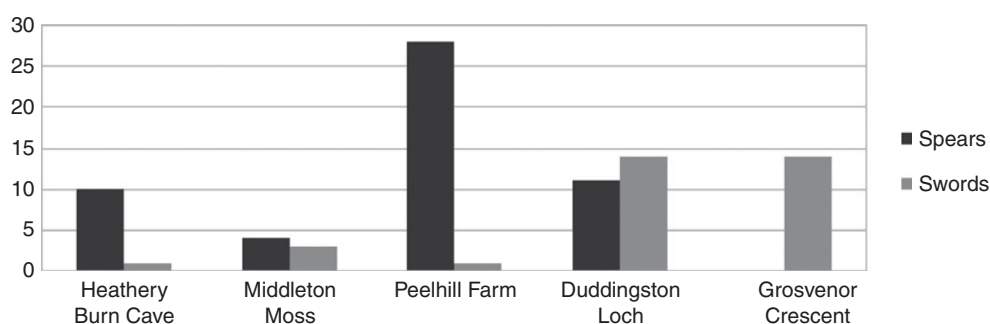
14.2: Note that the Grosvenor hoard was said to have been found containing fourteen to fifteen swords, only six of which are now extant, but the higher original number has been used here.

suggests that swords held some higher degree of symbolic worth than spears; swords are clearly a quintessential part of the warrior image and symbolism, yet not necessarily the core part of the actual warrior's tool set.

In examining the available evidence for the gender of combatants and the status of their weapons, this chapter has attempted to demonstrate that the archaeological evidence does not fully support some of the most deeply embedded cultural assumptions surrounding the nature and activity of warfare and warriors. To fulfil the potential offered by the ever-expanding degree of interest and research in this topic, there must be widespread clarity in differentiating long-held assumptions and information derived from active research.

WARRIOR FUNCTION VERSUS WARRIOR IDENTITY

Although the *possibility* of female combatants has been discussed, Late Bronze Age warfare as a concept and activity appears to have been a considerably androcentric sphere of activity in terms of its imagery and connotations. This is where we begin to see a potential divide between the physical, functional activity and social identity; potentially, a distinction between warriors (those who inhabit the social persona of a warrior and embody those concepts) and combatants (the people who actively take part in armed conflict).

Relevant sources of archaeological evidence regarding the issue of creating a warrior identity include weapon depositions, burials containing weapons and iconography. We have already briefly discussed iconography in relation to gender roles and identified a potential disjunction between practice and presentation regarding conflict whereby unexpected individuals might, for whatever reason, take part in combat without being identified by the wider community (or even by themselves) as warriors. It is possible to inhabit a role out of necessity or circumstance with whose persona you do not identify, potentially explaining how women may have been able to take part in warfare while warfare remained androcentric in the eyes of society. In contrast to the functional combatant of reality, we can see that there are occasions when the social identity that we currently recognize as that of the warrior has been deliberately constructed and conveyed to the wider world; it is close examination of the weapons in the archaeological record and their contexts which can illuminate this topic.

Examination of the burial evidence is not necessarily straightforward; Härke's (1990: 26–36) paper on British Anglo-Saxon graves suggested that a significant proportion of individuals interred with weapons could never have used them due to inappropriate age (twelve months to sixty years), inappropriate sizing (where the weapons were clearly made for someone else) or disability on the part of the individual (including badly knit broken bones, osteoarthritis and spina bifida). Meanwhile, he also noted that only five of the

seventeen interments in his research population that presented evidence of weapon-related trauma were buried with weapons. Thus, it can be demonstrated that although weapons in a burial do not indicate the presence of a *combatant*, they do indicate that the individual was sent to the grave with the *persona* of a warrior, using the weapons in a form of ritualized identity construction. These would be the burials of those who identified as warriors, or whose families did – in this case, choice appears to have been more important than reality. Therefore, burials with weapons should be considered evidence for the symbolic identity of a warrior, rather than its functional indicator. Perhaps surprisingly, given the widespread cultural importance attached to weapons and warfare in the Late Bronze Age, such burials are unfortunately extraordinarily rare during this period in northern Britain; however, a more general study taking data from across Europe examining the 'fit' between the persona constructed through grave goods and the interred individual would be extremely interesting. In particular, Hunter (2005: 56) notes that the weapons used to denote warrior identity appear to change regionally; in Britain, the sword is the preferred weapon to denote a warrior, but warrior graves in Belgium and Sweden are just as likely to contain a spear.

The possibilities arising from the study of the remaining avenue of evidence – deposition of weapons – is complex and varied, but examination of weapon hoards indicates a profoundly symbolic discourse between the depositors and their intended audience (whether that audience be the surrounding community or supernatural in nature). During the Late Bronze Age in northern Britain a total of seven spearheads, ten swords and five shields show some degree of particularly ritualized deposition in that the weapons were placed vertically into the ground, point-down, while the shields were placed on their edges in a circle. In other cases, although the weapons were not deposited with such obvious ritualistic symbolism, hoards were frequently placed in the ground with some care. Upon examination, the associations and combinations of weapons found in these hoards are as interesting as their placement. Where weapons are found in association, they are likely to be of the same type: swords were mostly deposited with swords and so on. This is most common with shields, whose only associations are other shields. This may be because the depositional message inherent in each type of weapon is the crucial factor – the depositions do not commonly reflect the range and proportions of weapons that might be carried by an individual and are therefore unlikely to reference an individual in particular. Where there are multiple deposits of one type of weapon, it is possible that the purpose was to amplify the message conveyed by that weapon; in which case, deposition of panoplies would weaken the intended effect. Finally, in terms of context, Yates and Bradley's (2010: 413) work in southern England found that the form of a location (whether a bog, lake or river, for example) was more important than whether the context was

simply 'wet' or 'dry'. Analysis of these forms, undertaken in tandem with analysing the hoard content (in terms of types, quantity, quality and condition), resulted in identifying subtle and varied patterning (when an accurate prove-nance of material and knowledge of the ancient environment of that particular location were known). It is particularly unfortunate that a lack of accurate and detailed provenance for many northern British finds, twinned with an insuffi-cient understanding of the prehistoric landscapes of the area, inhibit the type of analysis advocated by Yates and Bradley being applied to northern British Late Bronze Age material for the present.

Clearly, the positioning, content and contexts of weapon deposition had a strongly ritualistic element to it, the specific motivations for which remain opaque to a modern audience, but it seems likely that such deposition was used to fulfil several functions at once. The importance of weapons in this symbolic form of communication, where they were deposited by the own-ers/users of the weapons, may have related to the conscious and deliberate construction or presentation of a warrior identity by the depositor to the observers during their actual lifetime rather than purely at their death, as would occur with warrior burials. Crucially, the depositors constructed the image for themselves, rather than their family and/or friends doing so in retrospect. If this is the case, the variability in density, type and content of weapon deposition suggest that the criteria for presenting that identity was more than simply the ownership of a sword or other weapon. There may well have been strict sociocultural rules governing who could present themselves as a warrior, whether based on age, gender, place in the social hierarchy, hereditary position, membership of particular groupings or some other parameter, as opposed to who would actually behave as one. Thus, the weapons contain an inherent symbolism that was not necessarily related to their functional use during combat. In this, a disjunction between the functional and the ritualistic is again visible.

MULTIPLE IDENTITIES

Both combatants and those who cultivated the warrior identity in the Late Bronze Age were living, breathing individuals; it would be limiting and one-dimensional to assume that it was their sole activity or role within the wider society. Not only are they likely to have presented multiple identities, but it is of interest to consider how these identities could be inhabited and discarded at need and how those who were associated with conflict and killing could be integrated into the wider community during peaceful periods.

Humans fulfil different symbolic and functional roles, both concurrently and at different times of their lives, depending on their age, gender, location and circumstance; the existence of multiple identities should not detract from the

importance of each individual one. Those who would traditionally be labelled 'warrior' and only considered in that light may have had equally important social roles at various times, such as farmer, artisan or religious specialist. However, it remains likely that the time required to fulfil the activities of an intentional combatant and/or living the identity of a warrior would have meant that these roles were probably of some dominance in an individual's life. The high proportion of weapons showing evidence of use through edge-wear analysis – 31 per cent of northern British spears and 66 per cent of swords – suggest that many weapons were used in some form of combat. Experimental work suggests that technique is at least as important as strength in order to be effective during combat; although it is possible to wield Late Bronze Age weapons and inflict some damage with them after very little practice, the inexperience of the user would inevitably lead to expending wasted energy (putting the combatant at a functional disadvantage due to exhaustion) and place limitations on how they were used. Furthermore, weapons become badly damaged very quickly if they are not used skilfully in the manner for which they were designed (Anderson 2011a; Kristiansen 2002; Molloy 2006). The implication is that certain groups within the population would have had to spend a significant proportion of their time in training – a conclusion supported by the concept of self-preservation as much as the evidence itself. Even for those who cultivated the warrior identity but did not necessarily take part in actual combat, this aspect of their identity is likely to have been quite dominant given the sociocultural primacy accorded to warfare and warriors during this period.

There is therefore a crucial issue to consider regarding these individuals: despite aspects of conflict dominating their main identity, they had to be able to step into other identities at appropriate times, and – perhaps more importantly – their own communities had to accept those individuals both in their roles as combatants/warriors and as whatever else they may have been. The latter may have been particularly difficult because, although warriors are commonly associated with elite status, the remainder of the community would have spent the majority of their time farming and performing the tasks associated with daily living. Once the fighting stops, the warrior cannot simply be put away in a box until next time. How did this individual fit within his or her society? And how did that society view a person who had been deliberately socialized and trained to kill at will or who represents those values?

Although the nature and specific activities of warriors may have led to a degree of ambivalence towards them in general (particularly where only a relatively small proportion of the population were involved), it is highly unlikely that a community would have rejected such individuals in any concrete sense. Firstly, Grossman (2009: 265–266) makes clear the vital importance for warriors to be accepted by their own community if they are to remain

mentally stable after taking part in killing. Maintaining warriors was necessary for the safety of the group, so acceptance would also be necessary. Furthermore, there is no evidence that such individuals suffered any practical form of ostracism in life; indeed, warriors appear to have been at the wealthy end of the social spectrum, and the projection of a warrior image certainly seems to have been desirable. However, in order to balance any social tension between the existence of an elite, valued group within society engaging in activities which benefit the group on one side and the fact that those activities and attitudes would be unacceptable and dangerous in intragroup relations, it may have been necessary to conduct post-conflict cleansing rituals. Furthermore, such rituals may also have benefited the combatants' mental health, providing a psychological framework with which to distance themselves from potentially traumatic actions and experiences by essentially 'shedding' the combatant/warrior identity, at least for a time. Molloy (2006: 202) notes that even successful soldiers can subsequently develop a range of mental health issues, ranging from post-traumatic stress disorder to obsessive compulsive disorder. Thus, we can potentially explain the large-scale ritualistic deposition of weaponry and the ritual 'killing' of bronze weapons.

The practice of 'killing' weapons prior to deposition is widespread, if not common. This excessive, ritualized damage can occur in a number of forms; of the northern British examples, 20 per cent of the swords were the subject of purposeful pre-depositional damage in the form of a broken blade caused by catastrophic and repeated hacking (most probably using an axe), a bend greater than 30 degrees, more than one bend, burning (the most common form of damage) or some combination thereof.

Only three (4 per cent) of the bronze spearheads appear to have been the subject of purposeful pre-depositional damage – one by hacking and two by a combination of forms – although it is possible that this number would be far higher if evidence of snapping the shaft survived and was accorded the same symbolic importance. Additionally, shields may be subject to very ritualized damage; one of the shields recovered from the River Thames (Needham 1979) has large, triangular holes punched through the face and had also been pierced by a spear, while the Long Wittenham shield was pierced multiple times by a spear (Uckelmann 2011). Experimental work indicates that only a thrown spear could punch a hole through the shield face in this manner (Anderson 2011b), but it also seems unlikely that such spears were thrown during combat activities (Anderson 2011a); therefore, this may be an instance of ritualized damage either before or after the hostilities themselves.

Despite the overall proportion of weapons showing this form of treatment being low, swords are significantly more likely to be subject to it than spears, as previously noted. Furthermore, although weapons are destroyed in this way, other forms of metalwork are not (Harding 2007: 133), and therefore the
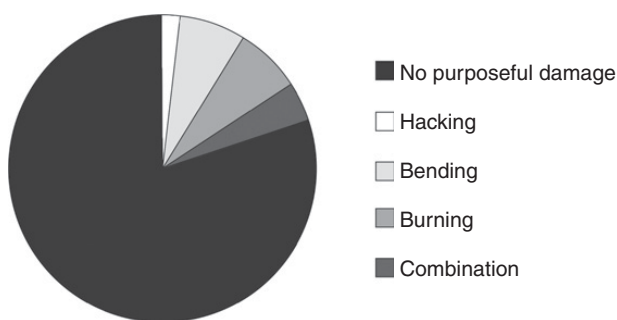
14.3: Distribution of observed damage in the data.

variety of motivations for such depositions focuses less on the rather vague concept of 'votive' and more on practical and social issues relating to conflict. Some weaponry may have been destroyed for the entirely practical reason that its presence acted as a danger, and those who destroyed the weapons wanted to ensure they could not be used against them in the future. Such an occasion is likely to have been spurred by recent conflict, and therefore one might expect such weapons to be used, although sadly all the destruction processes except bending mask such damage. Only two of the seven bent swords show combat damage, although this does not necessarily invalidate the theory. Different methods of 'killing' the weapon may have been used for different purposes – for example, hacking may have been used on the battlefield to destroy a weapon quickly for practical reasons, while burning or bending may have been undertaken at other times for more supernatural or psychological purposes. Examining larger populations of contemporary bronze weapons from across Europe might hopefully shed light on whether there is a meaningful relationship between the presence of combat damage and the type of damage involved in the ritualistic 'killing' of weapons.

Possible alternatives to the practical motivations just outlined may relate to the social issue of identity during conflict. Both Ralph (2009) and Gilmour (2007: 32) note the potential for weapons to be used ritualistically as substitutes for humans – either as a form of burial rite or to avert or end a conflict by channelling destructive activities against weapons rather than people. In the latter case, the assumption is that one side of a conflict destroyed the weapons of the other side as a substitution for their opponent's bodies. It is, however, also possible that one group destroyed weapons as a substitute for destroying their own bodies; or, in this case, in order to symbolically destroy/put aside their warrior identity. Such treatment does seem likely to have an element of the psychological about it since burning is the most common form of damage, and Pryor (2003: 276) notes that depositing metal that has been heated to warping point into watery locations will cause significant hissing and steaming – the act of burning thus forms a strong element of theatre and symbolism. In terms of

choosing the weapons for such an act, neither the evidence nor common sense suggest that each warrior would have destroyed his own weapon in a post-conflict cleansing ritual after every act of violence; economically, it would have been wasteful and unsustainable, while the inclusion of repaired weapons in the archaeological record that have clearly been used multiple times within their life cycle also indicates this was not the case. More compellingly, those weapons that were ritually killed show a very low rate of additional combat damage – 20 per cent of the swords, as opposed to the 66 per cent seen in the general population. Furthermore, that combat damage is far lighter than is generally seen on combat-damaged weapons suggests that weapons chosen for this treatment were more likely to be pristine examples, possibly even made for the act itself rather than weapons used in serious combat immediately prior to deposition. If the phenomena of ritually 'killing' weapons was an attempt to switch identity or separate warrior activity from the person, it would have needed to neutralize the socialization process of the warrior (Armit 2011: 501) and provide a psychological barrier between the extreme behaviours of combat and the mundane, both for the individuals involved and also their communities. Given that the community needed to see this theatrical separation of the violent identity from the mundane one, spatial analysis linking depositional locations of these weapons to known settlement sites might yield interesting results.

CONCLUSION

This chapter was originally conceived as a reaction to existing, mainstream ideas of what a warrior was in the Late Bronze Age – elite males, sprung fully formed into the world as skilled fighters, who fought with only the most high-status weaponry, such as swords and metal shields. For these individuals, the warrior identity was both innate (as opposed to carefully and deliberately constructed) and unproblematic (both mentally within themselves and externally to their communities). An absence of explicit questioning, exploration and testing of these basic assumptions suggested that the foundations of further work based on them might be unreliable.

   However, examination of prehistoric iconography, burial evidence, weapons and their contextual information suggest that, in many ways, the modern perceptions of prehistoric warriors appear to be precisely the way Late Bronze Age communities or individuals wished to present them. Despite this, it also appears that there was a substantive difference between the idealized warrior identity and the reality of an actual warrior – both in terms of who that warrior might be and how they came to inhabit that role. In addition to elite, sword-bearing males who might be expected to take part in combat, the evidence suggests it is *possible* that nontraditional individuals might also do

so – women, non-elite members of society who could take part based on their meritocratic skill with weapons, spearbearers and so on. Because this latter group did not conform to the contemporary idealized warrior identity, they may not have been seen by their communities as warriors, or even self-identified as such. These were combatants. Conversely, elite males who 'should' have taken part in fighting but could not, due to physical weakness for example, may have been able to inhabit the role without ever actually taking part in combat; these individuals would still be warriors. There is, therefore, a difference between a combatant and a warrior in the Late Bronze Age.

For those who did wish to present themselves as warriors to their surrounding community, whether a combatant or not, a key element appears to have involved the ritualized treatment and deposition of certain types of weapons. Large-scale deposits of weapons in homogenous groups do appear to relate to public identity construction, with variations in terms of the type of weapon deposited, its condition and the precise manner of its deposition presumably varying the message conveyed to the wider social group. Interestingly, as well as using these weapons to proclaim a warrior identity, it seems they may also have been used to put that identity aside. In ritually damaging certain specially chosen weapons, perhaps in the aftermath of a conflict, those who acted as combatants may have been creating a psychological barrier between their activities undertaken as warriors and the other identities that they inhabited at other times – such as family member, friend, artisan, farmer – so that their capacity for violence did not destructively leach into other arenas of their life. Furthermore, this post-conflict cleansing ritual would have allowed the surrounding community of non-combatants to continue to venerate the concept of a warrior without fearing that the reality might impinge into their society in dangerously inappropriate ways.

Much of the original research on which this chapter is based was drawn from a doctoral thesis concerned with the weapons and warfare of northern Britain between 1250 BC and AD 850. While those data have been able to stimulate ideas and discussion, the limited nature of its geographical scope inhibits the opportunity to fully develop and assess the theories and arguments outlined in this chapter. In particular, the relationship between behavioural phenomena such as the ritual 'killing' of weapons and the role of the warrior identity is a subject that would benefit from a detailed analysis of data drawn from across Europe. Larger datasets would provide a greater number of avenues of investigation and increase the reliability of conclusions drawn, while the comparison of data from different areas could provide fascinating evidence for both commonalities and differences in practice shown by contemporary communities for whom warriors and warfare were clearly centrally important.

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BODY AESTHETICS, FRATERNITY AND WARFARE IN THE LONG EUROPEAN BRONZE AGE: POSTSCRIPTUM

Helle Vandkilde

T HE VOLUME WARFARE IN BRONZE AGE SOCIETY PROVIDES AN opportunity to take stock of current warfare research in the long European Bronze Age c. 3000–700 BCE, particularly the place therein of warriors, who were often marginal figures in the first wave of war studies following Keeley's call in 1996. Numerous studies have since demonstrated the presence of war in prehistory through an array of materialities and casualties. There can then be no doubt that warfare formed part of life in the connected worlds of Bronze Age Afro-Eurasia. Perhaps the main challenge ahead is to pursue the instrumentality of warfare in the history of the Bronze Age because it has proved notoriously difficult to sociologically pinpoint war as a prime mover in historical change (Bossen 2006). Warfare and its agents are rather situated within the web of causes and effects of history: there seem to be data-grounded reasons to infer that war-related violence was more frequent during threshold periods of multiple transformations, even if this subject is also in need of more research (e.g., Otto, Thrane and Vandkilde 2006; Peter-Röcher 2007; Schulting 2013; Vandkilde 2014b).

Warfare as a history-maker is a current in several of the volume's articles, and this interest may well have motivated the revitalization of the warrior evident in several of the contributions: Bronze Age war certainly did not make itself; it was the warriors who made the wars, whether small or larger in scale. In the light of the historical twines of the research, it is pertinent to reflect upon the warrior as a heroic figure of beauty and a principal agent of war. In addition, the warrior

fraternity is discussed in the volume, and it is therefore appropriate to reconsider its origin, organization, and its ritual and historical significance.

BRONZE AGE WARRIORS: BEAUTY, VIOLENCE AND FRAGILE HIERARCHIES

In his seminal 1995 paper, Treherne portrayed the Bronze Age warrior as obsessed with his personal appearance whilst war itself was reduced to rituals; beauty before violence in a manner of speaking. In this respect, the volume's articles have moved a step forward.

Some authors suggest that warriorhood – the state of being a warrior – was a temporary identity or part-time profession for profit, one in which the warrior could readily transform into a trader (e.g., Kristiansen, Molloy, Klimscha, Harding, Horn). This notion seems reminiscent of the generalized male ideal predominant in egalitarian societies of Melanesia and Amazonia, where men act as warriors as the situation requires; overall, this state of affairs does not fit the Bronze Age very well (Schulting 2013), as will be argued henceforth.

In her article, Anderson maintains that the warrior identity is in its lack of definition, which is not quite true. Anthropological and archaeological writings outside the mainstream have dealt with warriors in some detail: indeed, warfare with the implicit expert handling of weapons inspires identification. The warrior is thus a social identity connected to warfare and motivated by companionship with fellow warriors and by violent encounters with foreign warriors and people. Thereby the warrior becomes a boundary-crosser, but at home he (or she) participates in other identity-shaping activities in everyday sociality and often holds representational roles (e.g., Clastres 1994; Harrison 1996; Treherne 1995; Vandkilde 2006a; van Wees 1992; Völger and von Welck 1990). Even if the warrior's being and doing are replete with dualities and entanglements, there is a limit to how fluid the warrior identity could have been because of the strong institutions regulating access to warriorhood throughout the Bronze Age and for that matter the Iron Age. Warrior fraternities can be organized in different ways and occur in more or less hierarchical settings (Vandkilde 2006a, 2006b, 2007: 6590), and they can join into larger military units as the situation requires, which is likely the case with the numerous dead warriors in the Tollense Valley (cf. Lidke with colleagues, Chapter 10 this volume).

The suggested division between warriors and fighters (Bunnefeld, Georganas; Anderson in Chapters 12, 13 and 14) invites a critical voice. Are the fighters not then warriors and the warriors not real warriors? There seems here to be a problem with the definition of the warrior as precisely a fighter. There seems to be nothing in the archaeological sources to suggest a division between status warriors and fighting warriors, albeit other people may have been mobilized to partake in the fighting at times. The rock carving case by

Ling and Toreld (Chapter 5) is a case in point underlining the violent foundation of warriorhood. Taking a bodily perspective, Warnier (2011) demonstrates that warfare always entails the warriors' subjectivity: warriors are indeed the professional agents trained in the skills of war, and detailed coordination of both body and weaponry is necessary to domesticate the universal fear simply as a precondition for survival. This is related to the production perspectives taken variously by Molloy, Pitman and Doonan, and by Gener, who pinpoints the handling and nursing of weapons as a lifestyle permeating other domains of society than war (in Chapter 6, 8 and 9).

Weapons in burials can, of course, primarily be symbolic in terms of status, rank, gender or profession, hence caution should be taken when using the term 'warrior grave' (cf. especially Georganas, Anderson). For example young boys interred with a weapon could hardly mean active warriorhood. In fact, there are source-critical problems with isolated use of the burial record in pursuit of warriors in the Bronze Age. The absence of skeletal trauma is (contrary to Georgana) a dubious proxy for non-warriorhood, as much violence does not leave traces on the bones, which may further be badly preserved or even cremated. Furthermore, war victims can carry skeletal trauma without being trained fighters themselves (e.g., Meyer, Meller and Heckenhahn 2009). The suggested divide between the warriors and the actual fighters may reveal problems with reconciling the innate violence with the epic ideal of beauty tied to the warrior, while the persistent idea of the warrior elite as a privileged ruling class may also intervene.

I would like first to return to the beautiful warrior so brilliantly mediated by Treherne whose analysis combined the archaeology of burials with Homeric warrior ideals and Classical Studies' aesthetics of the male body. In this understanding, the warrior is branded, in life and death, through spectacular weaponry, grooming equipment, dress with accessories, drinking gear and even chariot-riding and often presented with an air of inbred social superiority as well as the notion of equality among peers. This is a lived ideology, which in detail can differ from the social reality in other domains, as rightly emphasized by Ling and Toreld in the representational setting of rock imagery: individualizing and communal activities take place in the warrior group while its leadership at times is made clear. Following Treherne, genteel conduct among the companions is crucial; not least during their funerals, as the unequivocal end point of a glorious warrior career. This is similar to Kristiansen's warrior aristocracies in the Bronze Age (1984, 1999) and has a bearing on van Wees's Homeric status warriors (1992), again indebted to Weber's concept of the status group. Van Wees's version of warriorhood is thought-provoking for at least two reasons.

Firstly, the Homeric world of warriorhood is rife with status rivalry, and leadership is questioned to the extent that the hierarchy of warriors is rather

volatile. A fluctuating hierarchy could in many cases fit Bronze Age society and explain some of the social variation in existence over time and space. Secondly, the Homeric world of warriorhood exhibits with clarity the ambiguity in the life of the warrior, even in the most epic of narratives. Ideals of heroic conduct are lived, as close as possible, on and off the battlefield among equals. There are, however, situations, also very much part of the social reality, in which the courtly conduct moves into the background. Homeric warriorhood is indeed *also* about violent and lethal attacks on foreign cities with the purpose of obtaining war booty such as slaves and other valuables. Kristiansen's Chapter 3 with its Viking analogies to the Bronze Age makes a good parallel to the underlying unofficial economy provided by raiding warriors in the *Iliad* in particular. These vicious activities occur as subtexts to the lead story of heroic behaviour, which also vanishes when the enemy heroes are left dead, mutilated and unburied on the Trojan battlefield. Homer praises the warriors' beauty, bravery and honour in addition to their fame and glory on a truly epic magnitude, but he does not conceal that bloody raids and piracy also took place. The Swedish rock imagery reported by Ling and Toreld accords with these opposites of the warrior.

The Homeric epics are perhaps the most appropriate of several possible analogues including ethnography, but the doubleness of the warrior as a heroic figure capable of lethal violence is in fact a recurring theme throughout (cf. Vandkilde 2006a, 2006b). I might here add that precisely the interface between heroic and violent realities invites a thorough study to revise the insights made by Treherne twenty years ago. Moreover, it might be pertinent to maintain the concept of warrior elites as long as it is realized that such a hierarchy may have been transitory with porous boundaries, probably took several forms and could collapse. The double essence of the Homeric warrior could well be central to the Bronze Age, too, and can be summarized into two intermingling items:

Firstly, heroic thinking embeds much bellicose materiality in the Bronze Age in the same manner as it is the lead heading in the Homeric epics. Heroization surely informed the social reality of these linked worlds while later inspiring the practice of hero cults (Whitley 1995; Vandkilde 2006b, 2013), also reflected in 'men of bronze' and 'an age of heroes' in Hesiod's authorship. Heroic aesthetics – surely essential in terms of commemoration on both an individual and a communal level connected to funerals, ritual deposi- tions and imagery on rock and bronze – rarely tell the full and only story. Numerous weapon graves – for instance the Greek Shaft Graves (Georganas), Nordic oak coffins (Kristiansen, Bunnefeld) or Urnfield *Kriegergräber* (e.g., Clausing 1999; Sperber 1999; Winghart 1999) certainly commemorate the deceased male as a warrior with heroic undertones. The status as a particular sword-carrier or charioteer is effectively communicated in these ritual settings,

but there is no reason to believe that warriorhood was usually an empty claim and symbolic only. Rather, these people undertook leading roles in the waging of war as well as in social events on and off the battlefield. The absence of skeletal trauma is, as maintained earlier, not a valid argument for non-warriorhood.

Secondly, as vividly demonstrated by this volume (e.g., Harding, Lidke and colleagues), an overwhelming amount of data now demonstrate that warfare was quite widespread and often deadly, hence corresponding to the subtexts of alienating violence in the Homeric poems. The growing body of skeletal evidence for war-related violence concurs with the outcome of a plethora of use-wear studies of weaponry (e.g., Chapters 3 and 4; Horn 2013; Mörtz 2010). In addition, swords, spears, shields and armour became increasingly standardized and efficient, culminating in the Urnfield period (Molloy, Mörtz). Some weapon forms were clearly more effective in war than others, such as the flange-hilted Naue II swords and most spearheads. It is often difficult, however, to draw a line between functions in war and functions in other social activities. Archery makes an exception that may favour the argument of the dual make-up of the warrior: arrows are relatively rare in ritually informed categories of burials, depositions and imagery, but oppositely common throughout the long Bronze Age as lethal projectiles shot into human bodies. Archery was then commonly used in warfare whilst not underscoring the heroic conduct in the companies of warriors, here excepting the Bell Beaker warriors.

THE VIOLENT SOCIALITY OF THE WARRIOR: THE BRONZE AGE ORIGIN OF THE FRATERNAL MÄNNERBUND

The warrior fraternity was doubtless a fundamental institution in the various periods and geographies of the Bronze Age, albeit not necessarily in the exact same format throughout. Essentially, however, this is the *Gefolgschaft Männerbund* of Tacitus, the *militärische Demokratie* of Engels and the fraternal interest group of numerous ethnographies. Famously and with respect, Tacitus describes the noble spirit of equality and death-defiance within the fraternal companionship of Germanic warriors who fought loyally for their chief, who fought for victory. Violence, war and companionships go hand in hand (Tacitus 1948: 112–113). Warrior fraternities are otherwise found cross-culturally and also identifiable in the epic classics of the Rigveda and Beowulf among others. Earlier, we have moreover ascertained its centrality to the social order of Homeric society while it is also traceable in the Linear B tablets with a triple structure of *wanax* (king), *lawagetas* (war chief) and *hequetai* (companions with horses and chariots).

Treherne is likely the first archaeologist to explicitly associate Bronze Age masculine bodies, grooming and weaponry with the warrior fellowship and the Germanic *Gefolgschaft* (i.e., reciprocal codes of conduct working to ensure the

unity of the *Männerbund*). Other scholars have followed suit, in this volume with valuable contributions notably by Kristiansen, Harding, and Ling and Toreld (Chapters 3 and 5), but Treherne's analysis of this important institution and its Bronze Age origin remains seminal. Kristiansen is inclined to date the beginning of the fraternal institution to the Middle Bronze Age while Harding tentatively suggests the Late Bronze Age Urnfield period in his chapter (Chapter 2). Recent research, however, throws new light on the significance of this classic institution already from the very onset of the Bronze Age, thereby in fact supporting Treherne's original thesis of an early Europe-wide turning point in social organization.

The fraternity may well have served to socially glue together males and other people inhabiting the often dispersed and often not explicitly defended settlements, in the Nordic region and probably elsewhere with a strong pastoral component of human and animal mobility (e.g., Kristiansen, Chapter 3). Archaeologically, the warrior fraternity is strongly indicated by the both individualized and communal practices materialized in various weapon classes (superb or common) and equipment for grooming, drinking and driving from Scandinavia to the Mediterranean. In addition, partly shared belief systems transpire from imagery, burials and wetland sacrifices with weaponry: tales and rituals of social commemoration, clearly, but also a professional capacity for violence, defence as well as attack, as not least Tacitus – post-Bronze Age – mediates to the reader.

The paramount shift, firmly reported by Treherne (1995), happened c. 3000 BCE when ancestral communal rites and identities were arguably substituted by individual and personal display of social status. This sociostructural turn pinpointed in several articles by Kristiansen (e.g., 2011) and by Anthony's book (2007), has since obtained a new actuality through aDNA research in two parallel waves in 2015 (Allentoft et al. 2015; Haak et al. 2015):

Corded Ware people traced 75 per cent of their ancestral genes to the Eurasian Steppe Yamnaya pastoralists, hence documenting a massive in-migration to Europe from the eastern fringe around 3000 BCE. The results of these two genetic studies are then consistent with a spread of Indo-European speaking people, who assumedly brought new socio-political forms centred on *inter alia* patrilinear kinship descent and warrior fraternities (Mallory 2007; Kristiansen 2014: 345–346).

Although the degrees of biocultural hybridity in the wake of this watershed still pose quite a challenge to explore and understand, these recent results are strikingly in tune with genetic, isotopic, trauma-pathological and archaeological evidence from the Corded Ware multiple burials at Eulau (Meyer et al. 2009) and Corded Ware more generally (e.g., Peter-Röcher 2007: 164, fig. 43). The burial rites at Eulau had been adapted to a situation where an extended family, at least in part of eastern origin, had fallen victim to raiders, as suggested

by cranial trauma, arrow wounds and fractures on the limbs. Moreover, the rather clear-cut pattern of a transverse social institution of war in the large dataset of Corded Ware burials in Bohemia provides another piece of the puzzle (Vandkilde 2006a; 2007: 82–84).

CHANGE AND VARIABILITY IN THE BRONZE AGE WARRIOR FRATERNITY

On this background, the question can be posed whether the organizational set-up of the Bronze Age fraternity stayed constant over time and in geographical space. Treherne (1995) identified changes in the Bronze Age warrior fraternity through distinct transformations in mortuary body treatment and the accompanying gear. While finding no evidence of organized warriors in the ancestor-oriented collectives of the Neolithic,[1] he tracked the origin of warrior fraternities in its basic form to the first individualizing societies of the Corded Ware and Early Bronze Age. He further argued for increasing social distinction in the fraternity institution over time and pinpointed the Middle Bronze Age and especially the Late Bronze Age as the crux of warrior aristocracies.

   A Middle Bronze Age–Late Bronze Age warrior climax is broadly in accord with several of the volume's articles, where it is notable that Kristiansen traces the roots of the late Iron Age and Medieval kingly retinue to Late Bronze Age Europe. In the Swedish rock carvings, Ling and Toreld separate what looks like a Nordic maritime version of the Mycenaean fraternity due to the sometimes two-pronged leadership of the more anonymously drawn companions in the war canoes, which mostly carry seven to eleven warriors, but in some cases more than thirty. This may show how the fraternity could be small or large in size. Waterborne raiding by groups of warriors in the North is sustained by Horn in his analysis. Sword finds from the Middle Bronze Age and Late Bronze Age in non-Mediterranean Europe, here following Bunnefeld, Molloy and Mörtz, are simply too numerous to be signifiers and weapons of the fraternity chiefs only. Based on the Southern Scandinavian mound burials with weapons c. 1600–1100 BCE, this would mean that all sword- or spear-carrying adult men (between eighteen and thirty years of age or older) – in so far as physically capable – were organized in fraternities and only a small proportion of them were war chiefs, perhaps a position that ran in certain families. This accords with rock images where the sword (often in its sheath) is the standard weapon of the warrior: at least a good number of the companions

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[1] This has general validity, but there are early Copper Age cases that align with a fraternity organization (e.g., Tiszapolgar-Basatanya and Brześć Kujawski-Oslonki) in east central Europe and the Carpathian Basin (Vandkilde 2006a: 404–410).

must then have been sword-carriers and some of them were also axe- and club-wielders and spear-throwers – this is clearly supported by images on rock (Ling and Toreld).

However, what can presently be said about change and variation in the Bronze Age warrior fraternity? There are some guidelines.

At least for the Corded Ware of Bohemia, access to this particular warrior fraternity seems regulated through rank and male gender in a larger dispersed kin group while there were no apparent intraband distinctions (Vandkilde 2006a). The warrior fraternities consisted of adult male peers signified by their battle axes or maceheads in addition to the corded beaker for communal consumption of, presumably, ale (Klassen 2005). All warrior males appear equal, and a war leader does not transpire materially. By comparison, internal distinctions, socially and materially, in the warrior group are somewhat clearer in the Bell Beaker period as well as later (Sarauw 2007; Vandkilde 2006a: 415). There is then a trend towards a more materially distinct leadership of the fraternity over the time period 3000–1500 BCE and especially in the Late Bronze Age leadership when it emerges as a distinctive feature. Recruitment to the fraternities – age grades cross-cutting all kin groups and/or from high-ranking kin groups – could well have varied.

Urnfield fraternities may not have been organized decisively differently from the early ones, with room for variation in the different historical trajectories. Key data from the Neckarsulm warrior cemetery (HaA1) demonstrate, similarly interpreted by Kristiansen in this volume, that the young males were frequently inhumed (not cremated!). Companionwise, one-third were in-migrants, many skeletons carried pathological changes obtained from horseback riding (Wahl and Price 2013) and at least some males were sword-carriers (some graves were plundered). Knöpke has modelled the early Urnfield warrior fraternity as integrated with a segmentary tribal organization. This model (Fig. 15.1) is highly significant because of its dynamic triple character and footing in both written and archaeological sources (Knöpke 2009: 234–254). Urnfield society seems to be an *essentially* egalitarian structure in which warriors were usually recruited into the fraternity from a particular but spatially dispersed kinship segment in a manner not unlike the Corded Ware fraternity described earlier or even later (e.g., Bazelmans 1999: 4). The Urnfield structure of the southern German region pedals between a flat and a more salient hierarchy in which the war leader of a fraternity could obtain at least momentary superiority. Extraordinarily, this was done by recruiting local warriors from neighbouring kinship-based fraternities as well as by attracting foreign warriors lacking social embeddedness in the local kinship system. By consequence, the war leader could take absolute leadership as a sword-carrying and charioteering warlord of the Oikos, but this does not mean that such 'rulership' went unchallenged.
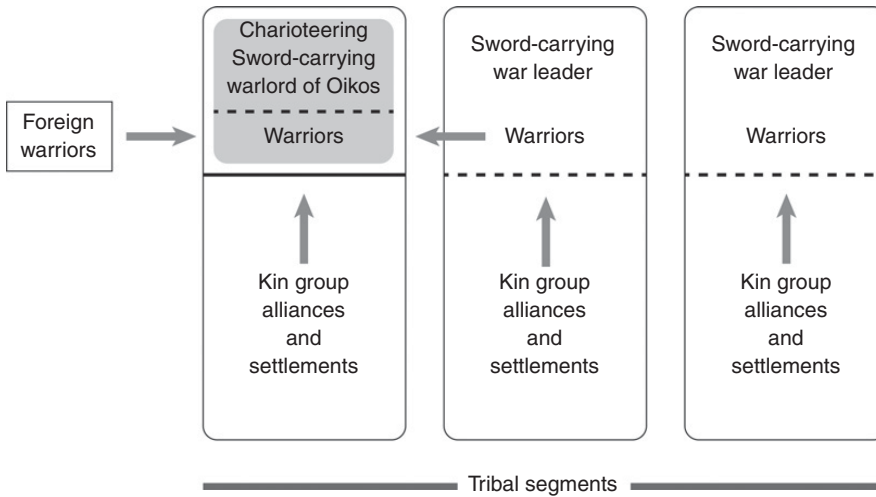
15.1: Model of the Urnfield fraternity as a flat, and momentarily more salient, political hierarchy within a segmentary tribal structure. (Adapted from Knöpke 2009: 253.)

In the longer term perspective, nevertheless, here is the outline of the retinue of warriors appointed by the political leader as a personal guard, as also emphasized by Kristiansen.

The *primus inter pares* conduct of the Homeric fellowship may be an adequate analogue as leadership in the situation of war was necessarily manifest while this power platform still had to be incessantly confirmed through action on and outside the battlefield. The previously presented Urnfield model can similarly suggest that hierarchization elevating the fraternity to a top societal position was a possibility, notably during times of war, migration and social unrest (cf. Steuer 2006). It is in this latter situation that the warrior fraternity could grow into an army of the size seen in the contemporaneous battlefield in the Tollense Valley or, for that matter, in the contemporaneous Aegean, where palatial states now collapsed due to attacking and looting armies of western Mediterranean freebooters, former mercenaries, disloyal Greek allies and loose tribal federacies of people later to become known as the Phoenicians; hypothetically, this happened only decades after the Trojan War.

RITUAL DIMENSIONS OF WAR AND POSTWAR: *GEFOLGSCHAFT* BEYOND DEATH

While the notion of ritual warfare proposed by Treherne and contemporaries is overall fraught with problems, there is growing evidence that warfare, and indeed its cultural handling in the Bronze Age, carried elements of religious beliefs. Entanglement of religiosity with warfare and its equipment and agents is a theme traceable in several of the volume's contributions, perhaps most

explicitly in Mörtz (Chapter 11) who identifies sacrifices of war booty in wetlands and Anderson (Chapter 14) who classifies damages on weapons as rituals performed before or after the hostilities.

In continuation of the arguments made earlier, how does this ritual dimension fit into the warrior fraternity and its *Gefolgschaft* structure?

A link between wetland depositions and (post-)war rituals was first hypothesized by Randsborg in 1995 in his book about the Hjortspring boat and its warrior fraternity. Today, this relationship is more widely recognized and substantiated. Surely, warfare at times must have disrupted the companionship of the warrior fraternity and thus, as Treherne (1995) argued, required an extraordinary warrior burial (in analogy with the funeral of Patroclos, 'wingman' of Achilles). A substitute burial on a situational basis is thinkable in the wet domain which was likely believed to provide a portal to the world of the dead. The exquisite weapons deposited around 1600 BCE in central and northern Europe can reveal beliefs in a tripartite cosmos with a watery netherworld, whereas the depositions themselves are compatible with a revival or reformation of the classic warrior fraternity (Vandkilde 2014a). Similarly, Brandherm and Horn (2012), through quantitative methods, can relate multiple deposits of daggers, halberds and swords from Early Bronze Age until the end of the Late Bronze Age to a layered cosmology.

Building on ritually deposited weaponry in wetlands, Horn and Melheim (2014) also interestingly suggest that weapons, in their capacity as extensions of warriors' bodies, may have substituted for humans in ritual depositions. Anderson in her contribution presents similar thoughts. In other words, *Gefolgschaft* went far beyond this life, as did memories of wars with their episodes of both bravery and cruelty. Albeit cases of ritually motivated damages to weapons are known (cf. Anderson), several studies have clarified that many of these weapons from wetlands were already damaged as a consequence of fighting.

On a much larger scale, Schulting and Bradley (2014) associate 150 skulls recovered from the River Thames with the numerous Late Bronze Age weapons that were also deposited in this river, as substantiated further in Mörtz's chapter. This can underpin that human remains and weapons were deposited in watery places as a substitute for a proper burial, as markers of victory or to honour – or dishonour – the fallen dead of singular warriors, the warrior fraternity and even larger military units. The Tollense Valley event is intriguing because it is here notoriously difficult to separate the actual large-scale fighting and killing from postwar actions at the site (Jantzen et al. 2011; Chapter 10). It then seems more like the end of a continuum in which the corpses of warriors were stripped of valuables after the fighting and thrown into the nearby meandering river where they were left in the flow of the water and therefore would eventually reach the Underworld.

In extension thereof, weapons in burials, depositions and images form a material hierarchy to which the gear of bodily beauty and drinking vessels may also belong. The hierarchy embraces in the top the most exquisite and unique and, in the bottom, the commonplace and colloquial such as wooden clubs, whilst most swords, spearheads and weapon axes would occupy a middle position. The weapons share a capacity for violence, but also for social bonding on and off the fighting ground, including appropriate rituals of life and death. In addition, aggrandizement on a personal and communal level is clearly also a parameter. Taken together, this may showcase the behavioural entanglement of violence, chivalry and rivalry in the life course of the warrior and the fraternity while rituals and beliefs can be added as yet another layer.

BRONZE AGE FUTURES: TOWARDS SITUATING WARFARE AND MILITARY UNITS IN EARLY HISTORY

Bellicose masculine personhood and associated sociality in the Bronze Age were arguably orchestrated by select body aesthetics, communal rites of commemoration with a twist of heroization, and indeed also violence against others. This crucial dynamic is not overly visible in the present volume, but, on the affirmative side, attention is paid to the warrior fraternity and to the rich data on war-related violence from skeletal trauma to damaged weaponry. The ritual aspects of warfare in funerary and sacrificial domains are also present, as well as efforts to penetrate the normative barrier between warfare and economics and between the warrior and the trader who evidently shared the capacity for long-range mobility. In addition, history clearly matters to the volume's contributors. It remains for future studies to explore the degree of centrality of warriorhood and war in Bronze Age history.

Warfare is about cultural encounters rather than simply a particular form of violent social action: human agents of war – warriors, war leaders, victors, collaborators, allies, enemies and victims – interact with each other, with civilians and ritual specialists, and with material objects and environments in ways that impact society, hence potentially driving historical change. The topical question thereby arises: how, and to what extent, do warfare and its agents foster and expedite social change? Answers to this question may lie in the ability of archaeology to identify in the rapidly growing datasets (1) preludes to war, (2) the peaks of violent encounters, and (3) the cultural management of war-related violence and, not least, postwar situations. The first could be the signs of a severe crisis evident, for example, in disruptive change in cultural sequences and in environmental data (e.g., Kneisel et al. 2012). The second can be exemplified by the Tollense Valley event, whereas the varied data on Bronze Age war and warriorhood obviously pose a large potential to explore both the second and third of these themes.

The warrior fraternity may be intrinsic to social change, predominantly as a socially reproductive engine in general. However, this institution possibly became historically instrumental at key points such as c. 3000 BCE, 1600 BCE and particularly c. 1200 BCE, when joining into larger and more unruly federal armies of fraternities, former mercenaries, buccaneers and angry (and hungry?) young men. Bronze Age Europe underwent change gradually and variably, as well as overridingly, through historical thresholds. Warriors, with their capacity for violence and innate faculty to form strong military units, most likely played some form of role therein. This is compatible with the sources. Reassembling warfare, warriors and weapons would make a strong triumvirate in the quest to uncover single and multiple twines of Bronze Age history.

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